# The OIL and GAS JOURNAL

PRODUCING REFINING ENGINEERING MARKETING

VOL. 28. NO. 47. TULSA, OKLAHOMA, APRIL 10, 1930


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State _____


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Title _____
Company _____
Address _____
City _____
State _____


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# Crude Oil Market Gaining Strength

**Highest daily average estimated total production in 1929, week ended Aug. 24, 2,975,435 bbls. Lowest in 1929, Dec. 27, 2,595,320 bbls.**

## Industry Feels Benefits of Conservation Movement. Gasoline Situation Big Factor in Any Price Advance

**Highest daily average estimated light oil production in 1929, week ended Sept. 14, 2,534,524 bbls. Lowest in 1929, Apr. 13, 2,142,036 bbls.**

By Andrew M. Rowley

Substantial progress made in solving the crude oil overproduction problem in the different flush areas throughout the country is reflected in a steady strengthening of the crude oil market. There is every reason to believe this improvement will continue as a result of extensions of present conservation agreements and the opening of the season of maximum consumption. Consequently, there is ample basis for the feeling conditions within the near future will warrant prices more in line with costs.

Crude oil runs to stills have not shown the reduction it was believed necessary to stabilize the gasoline situation. In fact, in a majority of cases, these runs have been increased despite efforts of leaders of the industry, the Federal Oil Conservation Board and the American Petroleum Institute to get the refining industry to curtail its operations one-seventh. The large and increasing stocks of gasoline were given as the reason for the reduction in the crude oil price schedule last January and it is pretty safe to assume the gasoline situation will be a major factor in any consideration of an advance in crude oil prices.

The crude oil situation in California is better than it has been for several years and operators have agreed to continue present conservation programs for another 30 days. Enforcement of the natural gas conservation law will help solve the overproduction problem there.

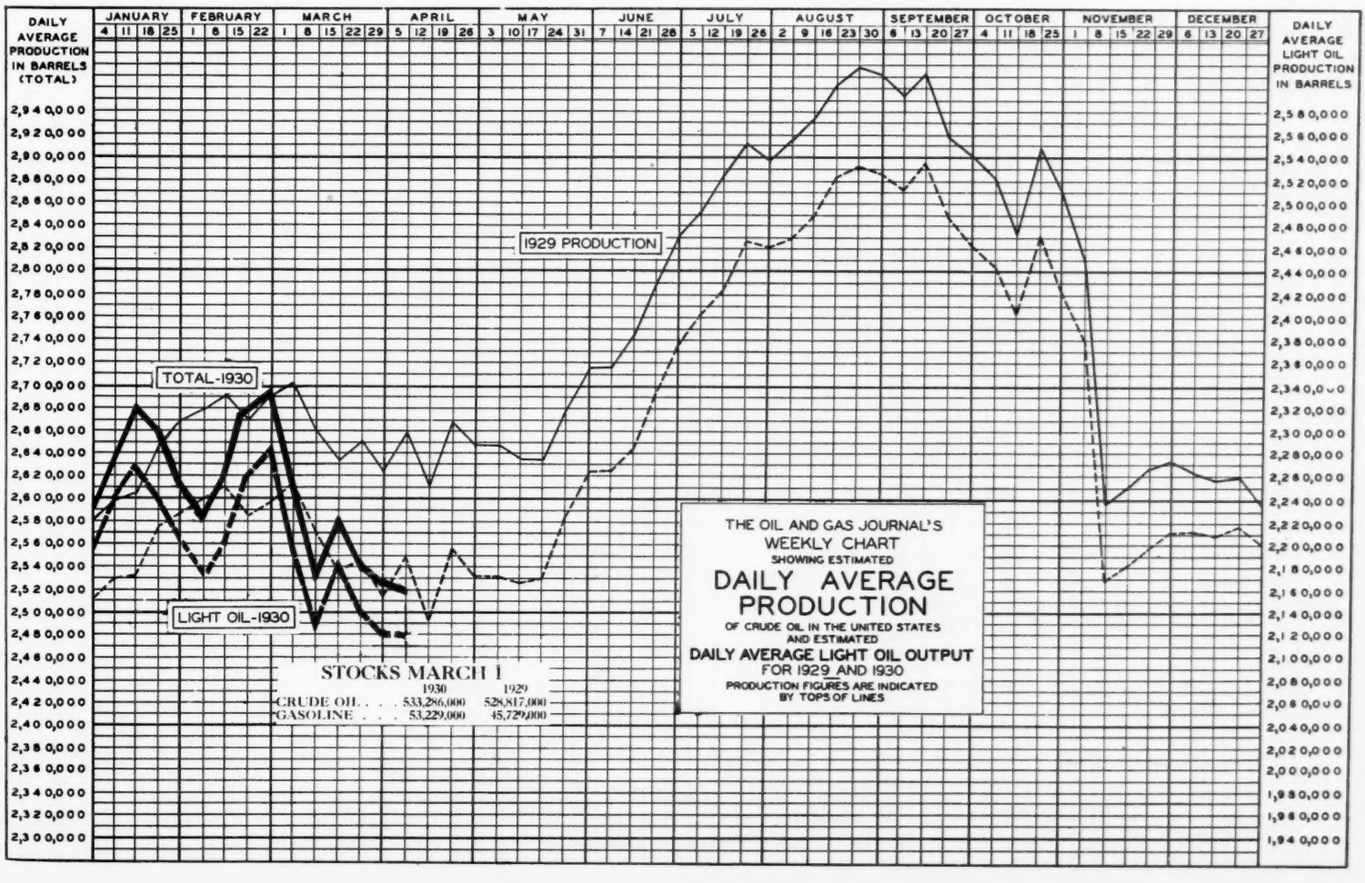
Consumption so far this year has registered a greater gain than had been expected. With improvement in general business conditions there is no question but what another record will be established this year in the demand for gasoline and other refined products. The petroleum industry should be prepared to profit by this demand. The surest way to do this is to bring stocks of gasoline down to a point where withdrawals will be made from storage. There is more than enough refinery capacity in the country to take care quickly of any demand and large stocks of gasoline simply stand in the way of better prices.

### PRODUCTION IN THE UNITED STATES

Estimated daily average production of light and heavy gravity oil in the United States for week ended April 5 and a comparison with the previous week follows:

| | April 5 | | March 29 | |
|---|---|---|---|---|
| | Light | Heavy | Light | Heavy |
| **Oklahoma—** | | | | |
| Oklahoma City | 95,770 | ..... | 73,860 | ..... |
| St. Louis-Pearson | 38,715 | ..... | 39,820 | ..... |
| Seminole | 204,385 | ..... | 208,725 | ..... |
| Northern miscellaneous | 240,510 | ..... | 237,465 | ..... |
| Southern fields | 55,505 | ..... | 54,390 | ..... |
| Total Oklahoma | 634,885 | ..... | 614,260 | ..... |
| **West Texas—** | | | | |
| Hendricks | 85,795 | ..... | 87,825 | ..... |
| Yates | 118,894 | ..... | 136,370 | ..... |
| Remainder | 115,450 | ..... | 113,881 | ..... |
| Total West Texas | 320,139 | ..... | 338,076 | ..... |
| North Louisiana | 38,405 | 5,305 | 37,980 | 5,345 |
| Arkansas | 17,225 | 40,535 | 17,470 | 41,110 |
| North Central Texas | 133,605 | ..... | 133,755 | ..... |
| Texas Panhandle | 90 986 | ..... | 89,945 | ..... |
| East Central Texas | 28,874 | ..... | 26,280 | ..... |
| Kansas | 117,320 | ..... | 114,180 | ..... |
| Total Mid-Continent area | 1,381,439 | 45,840 | 1,371,946 | 46,455 |
| Gulf Coast | ..... | 213,179 | ..... | 210,462 |
| Southwest Texas | ..... | 62,114 | ..... | 65,645 |
| Eastern | 132,000 | ..... | 133,500 | ..... |
| Rock Mountain area | 78,213 | ..... | 76,493 | ..... |
| **California—** | | | | |
| Santa Fe Springs | 129,000 | ..... | 133,000 | ..... |
| Long Beach | 100,000 | ..... | 103,000 | ..... |
| Huntington Beach | 29,000 | ..... | 30,000 | ..... |
| Elwood | 42,000 | ..... | 41,000 | ..... |
| Ventura Avenue | 44,000 | ..... | 44,500 | ..... |
| Seal Beach | 24,500 | ..... | 25,000 | ..... |
| Remainder of State | 160,000 | 85,000 | 162,000 | 86,000 |
| Total California | 528,500 | 85,000 | 538,500 | 86,000 |
| Total United States | 2,120,152 | 406,133 | 2,120,439 | 408,562 |
| Grand total | | 2,526,285 | | 2,529,001 |

→ **Total Decrease, 2,716 Bbls.; Light Oil Decrease, 287 Bbls.** ←



# Advance in Gasoline Continues

## Large Refiners in Oklahoma Establish Price of 6¾ Cents on U. S. Motor Grade. Fuel Oil Demand Slow

By C. O. Willson

With a majority of the larger refiners quoting 6¾ cents on U. S. Motor gasoline to the jobbing trade a price range of 6½ to 6¾ cents was well established the first of the week in Oklahoma (Group 3) on this grade regardless of the source of supply. This range of one-quarter cent between the high and low contrasts with the three-quarters to 1¼-cent spreads which prevailed late last year and the first two months of this year.

The narrow spread reflects a situation in which those refiners who have been quoting the lower prices have had an improved domestic demand and have been able to gradually advance their prices until now some of them are quoting the top price of 6¾ cents. The latter price was established the first of the week when the larger refiners advanced from a 6½ or 6⅜-cent level.

Nothing has developed over the past week which has changed the favorable outlook for gasoline prices including natural gasolines, an improvement which first became apparent last month. Refiners with their own station outlets and jobber contracts with rare exceptions report a week-to-week increase in gasoline movement from refineries to bulk stations. The experience of these companies which is supported by government data for the first two months of this year have discounted the fears expressed earlier in the year that gasoline consumption in 1930 would be disappointing due to depressed business conditions. Regardless of conditions in other lines of business there have been no developments in the distributing end of the oil business which do not point to at least a normal increase in gasoline demand through the remainder of the year.

### REFINED MARKET BAROMETER

Steady improvement in the domestic gasoline demand coupled with increased activity in export channels reflected an improved price situation at refineries during the past week. The increases in the latter's tank car prices have brought an advance in the gasoline tank wagon and service station prices in New York and New England, the first general increase of the year in retail market. The only soft spot in the gasoline market appeared to be in California where a situation largely local in scope has resulted in a wide range in prices. The demand for kerosene was fair over the week but no general changes in prices were reported. Practically all products used as fuels continued to be classed as weak at interior points although the coastal markets are firm with predictions of higher prices. Some grades of fuel oil have been lowered in California. Diesel oil sales are running well ahead of last year. Natural gasolines advanced fractionally in Mid-Continent with reductions effective in California. The demand for lubricants is showing a seasonal increase. Wax inquiries were reported more numerous in the East but otherwise there was no change in the dull market which has prevailed for several weeks.

**Mid-Continent**—Refinery gasoline and natural gasoline prices generally higher. Kerosene demand fair to strong in the several areas with higher prices in Arkansas and North Louisiana. Fuel oils sluggish except in these two areas. Wax inactive. No change in other products.

**East Coast**—Gasoline tank car market stronger and first tank wagon and service station advance announced for part of territory. Large export inquiries reported first of the week. Kerosene movement fair. Bright stocks slow. Fuel oil firm. More inquiries for wax.

**California**—Several adjustments made in prices. Due to price wars a few sellers have lowered prices both on refinery gasolines and natural gasolines for domestic movement. Several grades of distillates and fuel oil also lower.

**Chicago**—Gasoline movement improves with better weather conditions. Kerosene more active with no change in prices. Demand for fuel oils and gas oils slow.

**Pennsylvania**—Gasoline more active and prices on some grades higher. Fair movement of kerosene. No important changes in demand and prices for neutral oils and cylinder stocks.

**Gulf Coast**—Fuel oil and gasoline strong.

There were few changes in prices received for other products. Kerosene has not been as active as many had expected although it is predicted that buying will be in greater volume over the remainder of the month. It is stated that spring work has been delayed in some of the agricultural sections of the Middle West and with the arrival of better weather the farmer demand for kerosene will increase. The price ranges in the kerosene grades remained unchanged over the week.

The demand for all grades of fuel oil, including distillates and gas oil, continues slow and prices have usually been lowered when any changes were made. With the arrival of warmer weather, cold test is losing its important position in specifications and refiners who have been able to secure premium prices for low cold test material in a few cases are having difficulty finding a satisfactory spot market. The low gravity fuel oils, usually the residuum from the cracking operations appeared to be the weakest grades last week. This material has a low cold test and the demand was steady during the winter months. It is not so desirable as a summer fuel and buyers reported additional concessions in prices.

#### Refinery Situation

The refinery situation in the Mid-Continent by areas is summarized in the accompanying table based on the latest available report of the Bureau of Mines covering February operations. Crude oil runs to stills were only increased 10,000 bbls. daily in February over January and were slightly less than in February of last year.

As in other parts of the country gasoline yields at refineries in the Mid-Continent Field are constantly increasing so that gasoline production in February was 9 per cent greater than in February of last year despite the fact that crude runs to stills were less. Mid-Continent refiners as a group, however, have kept their gasoline output moving to the trade so that on the first of March gasoline stocks were practically the same as on the same date last year totaling approximately 7,000,000 bbls. on both dates. This inventory situation is in contrast to the rest of the country where gasoline stocks at refineries on March 1 were 7,500,000

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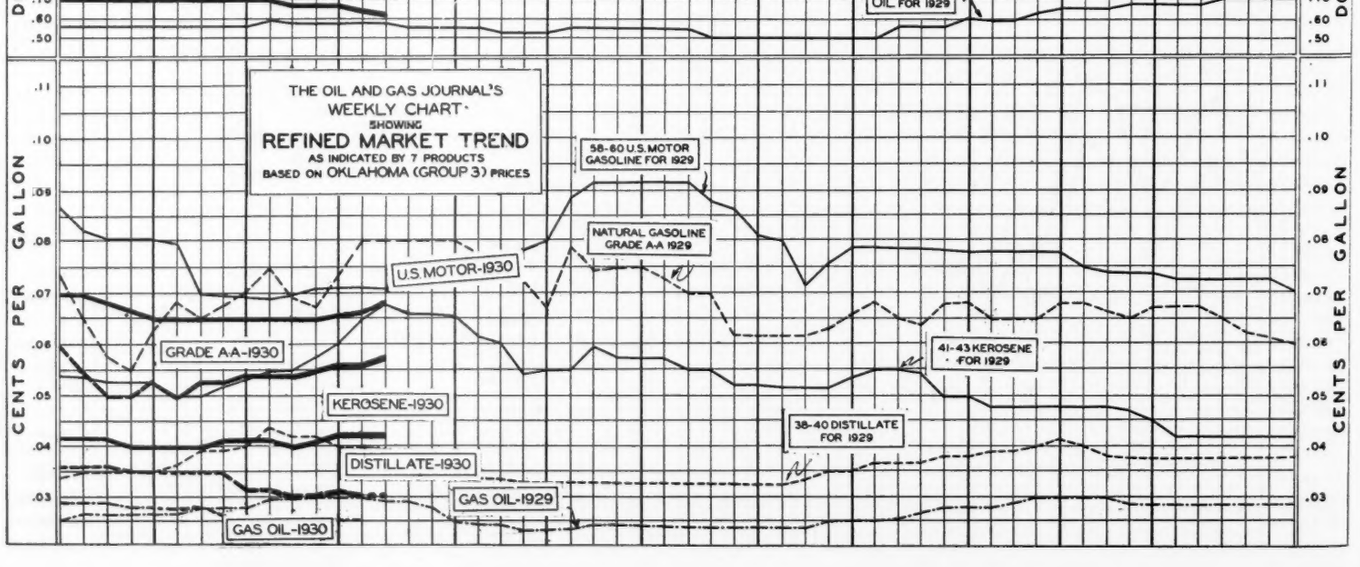


# Gain in Refinery Crude Oil Runs

## All Groups in Mid-Continent Area Increase Operations Except North Louisiana. More Than Year Ago

Mid-Continent refiners in April will run 22,700 bbls. daily more crude oil to their stills than in February, according to The Oil and Gas Journal's monthly check of plant operations in that area. The daily crude oil runs for the month, according to estimates made by operators the first few days of the months will total 554,200 bbls. and this compares with a daily average of 531,500 bbls. in March.

The April runs compare with a daily average of 530,530 bbls. in April of last year and an average of 451,225 bbls. in April, 1928. The fact that many Mid-Continent refiners curtailed their crude runs during the winter months and it is now necessary to expand operations to take care of the spring demand for gasoline is largely responsible for the increase. Market conditions are also considered more favorable.

### Oklahoma

The increase of 8,600 bbls. in Oklahoma for April is brought about by gains of several plants. The largest increase was that of the Mid-Continent Petroleum Corp. at West Tulsa. The corporation reduced its runs approximately 20 per cent late in December, but will resume operations on a basis of approximately 22,000 bbls. daily in April. The Globe Oil & Refining Co. this week started operating two new Jenkins cracking units at its Cushing plant.

### North and Central Texas

North and Central Texas had the largest gain of any area, the group's increase being 10,300-bbls. daily. The plant of the Orient Petroleum Co. at Wichita Falls is operating again and that of the Star Producing & Refining Co. at Fort Worth is also running crude following a shutdown. Small increases were reported by several companies. The runs of the Phillips Petroleum Co. at Borger have been increased from 7,300 bbls. daily in March to 9,500 bbls. daily in April.

### North Louisiana

The North Louisiana refiners were the only group to report a decrease for April. This was brought about partially by the shutdown of the Crystal Oil Refining Corp. plant at Shreveport. This plant will not resume operations during April. The Texas Company's plant at Ardis which was shut down for repairs last month, has resumed operations on a basis of 3,300 bbls. daily.

### Arkansas

In Arkansas the Smackover plant of the Simms Oil Co. has resumed operations after a shutdown in March to make changes in plant equipment. No important changes were reported in the operations of the other plants in the State.

### West Texas

In West Texas, the plant of the Bluebonnet Oil Refining Co. has resumed operations after a shutdown. The plants of the Mid-Tex Refining Co. at Midland and the Sweetwater Oil & Refining Co. at Sweetwater, Tex., were shut down the first of April. Each has small capacity. Several companies increased the crude runs at their plants.

There were no important changes in Kansas operations.

### RUNS TO STILLS AT MID-CONTINENT REFINERIES

| | |
|---|---|
| **1928** | |
| January 1 | 415,125 |
| February 1 | 418,275 |
| March 1 | 427,145 |
| April 1 | 451,225 |
| May 1 | 479,225 |
| June 1 | 487,135 |
| July 1 | 506,310 |
| August 1 | 543,625 |
| September 1 | 563,270 |
| October 1 | 547,820 |
| November 1 | 550,000 |
| December 1 | 520,000 |
| **1929** | |
| January 1 | 508,550 |
| February 1 | 506,800 |
| March 1 | 514,950 |
| April 1 | 530,530 |
| May 1 | 577,500 |
| June 1 | 585,030 |
| July 1 | 565,800 |
| August 1 | 555,250 |
| September 1 | 552,300 |
| October 1 | 544,720 |
| November 1 | 545,473 |
| December 1 | 540,630 |
| **1930** | |
| January 1 | 535,460 |
| February 1 | 519,355 |
| March 1 | 531,500 |
| April 1 | 554,200 |

### MID-CONTINENT REFINERY OPERATIONS

(Based on operations April 1, 1930, and March 1, 1930)

| | No. of plants Apr. 1 | Daily crude cap (bbls.) | Daily crack cap (bbls.) | Plants oper. Apr. 1 | Runs to stills Apr. 1 | Plants oper. Mar. 1 | Runs to stills Mar. 1 | Daily inc., Apr. 1 |
|---|---|---|---|---|---|---|---|---|
| Arkansas | 9 | 44,800 | 13,150 | 8 | 32,400 | 7 | 29,550 | 2,850 |
| Kansas | 15 | 130,500 | 73,850 | 15 | 97,500 | 15 | 95,400 | 2,100 |
| North Louisiana | 6 | 58,700 | 23,500 | 5 | 31,100 | 5 | 33,150 | *2,050 |
| Oklahoma | 45 | 307,800 | 116,750 | 42 | 206,750 | 42 | 198,150 | 8,600 |
| North and Central Texas | 37 | 171,700 | 25,000 | 35 | 110,200 | 32 | 99,900 | 10,300 |
| West Texas | 29 | 145,000 | 53,850 | 25 | 77,300 | 26 | 75,350 | 1,950 |
| Total | 141 | 858,500 | 306,100 | 130 | 554,200 | 127 | 531,500 | 22,700 |

*Decrease.

### REFINERY OPERATIONS IN KANSAS

(Plants which have been in operation during the past year)

| Name and address— | Daily capacity | Runs Apr. 1 | Runs Mar. 1 |
|---|---|---|---|
| Barnsdall Refineries, Inc., Wichita | 4,000 | 2,000 | 2,000 |
| Derby Oil Co., Wichita | 6,000 | 5,500 | 3,000 |
| Eldorado Refining Co., Eldorado | 3,500 | 3,000 | 2,500 |
| Golden Rule Refining Co., Wichita | 1,500 | 1,000 | 800 |
| Kanotex Refining Co., Arkansas City | 10,000 | 7,000 | 6,000 |
| Independent Oil & Gas Co., Kansas City | 6,000 | 5,000 | 5,000 |
| National Refining Co., Coffeyville | 6,500 | 5,000 | 6,000 |
| Peerless Oil Refining Co., Chanute | 3,000 | 1,800 | 1,800 |
| Shell Petroleum Corp., Arkansas City | 22,000 | 17,000 | 17,000 |
| Sinclair Refining Co., Coffeyville | 10,000 | 11,000 | 11,000 |
| Sinclair Refining Co., Argentine | 9,500 | 5,000 | 7,000 |
| Skelly Oil Co., Eldorado | 23,000 | 13,700 | 13,000 |
| Standard Oil Co. of Kansas, Neodesha | 12,000 | 3,000 | 3,000 |
| Vickers Petroleum Co., Potwin | 3,500 | 2,500 | 2,300 |
| White Eagle Oil Corp., Augusta | 10,000 | 10,000 | 10,000 |
| Total | 132,000 | 97,500 | 95,400 |

*Shut down.

### REFINERY OPERATIONS IN OKLAHOMA

(Plants which have been in operation during the past year)

| Name and address— | Daily capacity | Runs Apr. 1 | Runs Mar. 1 |
|---|---|---|---|
| Anderson-Prichard Oil Co., Cyril | 4,000 | 4,500 | 4,500 |
| Barnsdall Refineries, Inc., Barnsdall | 6,000 | 4,000 | 4,000 |
| Barnsdall Refineries, Inc., Okmulgee | 10,000 | 3,500 | 4,000 |
| Bell Oil & Gas Co., Grandfield | 4,500 | 2,500 | 3,300 |
| Champlin Refining Co., Enid | 16,000 | 9,500 | 8,000 |
| Citizens Refining Co., Seminole | 1,000 | 100 | 100 |
| Continental Oil Co., Sapulpa | 10,000 | 1,500 | 1,500 |
| Continental Oil Co., Ponca City | 30,000 | 15,000 | 16,000 |
| Cushing Refining & Gasoline Co., Blackwell | 1,800 | 1,800 | 1,000 |
| Cushing Refining & Gasoline Co., Cushing | 3,500 | 2,200 | 2,000 |
| Eason Oil Co., Enid | 5,000 | 2,500 | 1,800 |
| Empire Oil & Refining Co., Cushing | 5,000 | 4,700 | 4,700 |
| Empire Oil & Refining Co., Okmulgee | 4,000 | 4,000 | 4,000 |
| Empire Oil & Refining Co., Ponca City | 7,500 | 7,500 | 7,500 |
| Garber Refineries, Inc., and Omar Refining Co., Garber | 3,500 | 2,400 | 2,400 |
| Globe Oil & Refining Co., Blackwell | 7,500 | 7,000 | 7,000 |
| Globe Oil & Refining Co., Cushing | 15,000 | 10,000 | 10,000 |
| Homaokla Oil Co., Allen | 3,000 | 1,500 | 1,200 |
| Illinois Oil Co., Cushing | 3,000 | (*) | (*) |
| Imperial Refining Co., Ardmore | 5,000 | 2,800 | 2,800 |
| Independent Oil & Gas Co., Okmulgee | 5,000 | 5,000 | 3,500 |
| Johnson Oil Refining Co., Cleveland | 6,000 | 5,000 | 5,000 |
| Mid-Continent Petroleum Corp., West Tulsa | 40,000 | 22,000 | 18,000 |
| Northwestern Refining Co., Tonkawa | 3,000 | 3,000 | 3,000 |
| Peppers Gasoline Co., Covington | 1,000 | 750 | 750 |
| Pierce Oil Corp., Sand Springs | 8,000 | 7,000 | 7,000 |
| Producers Oil Co., Bristow | 2,500 | 1,500 | 1,500 |
| Producers & Refiners Corp., West Tulsa | 6,000 | 4,900 | 3,400 |
| Pure Oil Co., Ardmore | 5,000 | 2,100 | 2,000 |
| Pure Oil Co., Muskogee | 9,000 | 8,000 | 8,000 |
| Remington Oil Co., Wewoka | 2,000 | (*) | (*) |
| Rock Island Refining Co., Beckett | 2,500 | 1,800 | 1,800 |
| Deeprock Oil Corp. (Shaffer), Cushing | 10,000 | 10,000 | 10,000 |
| Sun Oil Co., Yale | 5,000 | 4,600 | 4,600 |
| Sinclair Refining Co., Muskogee | 1,000 | 400 | 600 |
| The Texas Company, West Tulsa | 15,000 | 15,000 | 15,000 |
| Texas Pacific Coal & Oil Co., Wynnewood | 2,500 | (*) | (*) |
| Tidal Refining Co., Drumright | 11,000 | 10,000 | 10,000 |
| Transcontinental Oil Co., Boynton | 2,500 | 2,000 | 1,800 |
| Transcontinental Oil Co., Bristow | 5,000 | 4,000 | 3,500 |
| Western Oil Corp., Beckett | 2,000 | 1,500 | 1,500 |
| White Oak Refining Co., Allen | 8,000 | 6,000 | 6,300 |
| Wilcox Oil & Gas Co., Bristow | 5,000 | 2,000 | 2,000 |
| Wirt Franklin Petroleum Corp., Ardmore | 4,000 | 2,300 | 2,300 |
| Yale Oil Corp., Yale | 1,500 | 900 | 800 |
| Total | 310,800 | 206,750 | 198,150 |

*Shut down.

### REFINERY OPERATIONS IN NORTH LOUISIANA

(Plants which have been in operation during the past year)

| Name and address— | Daily capacity | Runs Apr. 1 | Runs Mar. 1 |
|---|---|---|---|
| Bayou State Refining Co., Hosston | 700 | 600 | 600 |
| Crystal Oil Refining Corp., Shreveport | 14,000 | (*) | 4,300 |
| Dixie Oil Co., Superior | 3,000 | 3,000 | 2,800 |
| Louisiana Oil Refining Co., Shreveport, Bossier | 24,000 | 17,500 | 16,750 |
| Shreveport, El Dorado Pipe Line Co., Shreveport | 10,000 | 6,700 | 8,700 |
| The Texas Company, Shreveport | 7,000 | 3,300 | (*) |
| Total | 58,700 | 31,100 | 33,150 |

*Shut down.

### REFINERY OPERATIONS IN ARKANSAS

(Plants which have been in operation during the past year)

| Name and address— | Daily capacity | Runs Apr. 1 | Runs Mar. 1 |
|---|---|---|---|
| James H. Berry & Sons Co., Waterloo | 2,000 | (*) | (*) |
| Henry H. Cross Co., Smackover | 6,000 | 5,000 | 5,000 |
| Houston Oil Co., Camden | 3,000 | 3,500 | 3,000 |
| Kettle Creek Refining Co., Pearson | 5,000 | 2,800 | 2,600 |
| Lion Oil & Refining Co., El Dorado | 12,000 | 8,000 | 8,500 |
| Macmillan Petroleum Products Co., El Dorado | 1,800 | 1,600 | 1,550 |
| Ouachita Valley Refining Co., El Dorado | 2,000 | 1,000 | 900 |
| Root Refining Co., El Dorado | 10,000 | 8,000 | 8,000 |
| Simms Oil Co., Smackover | 3,000 | 2,500 | (*) |
| Total | 44,800 | 32,400 | 29,550 |

*Shut down.

### REFINERY OPERATIONS IN WEST TEXAS

(Plants which have been in operation during the past year)

| Name and address— | Daily capacity | Runs Apr. 1 | Runs Mar. 1 |
|---|---|---|---|
| Amarillo Producers & Refiners Corp., Pyote | 3,000 | 600 | 1,000 |
| Big Spring Refining Co., Big Spring | 2,500 | 900 | 1,300 |
| Bluebonnet Oil Refining Co., Wickett | 5,000 | 2,000 | (*) |
| Burford Oil Co., Pecos City | 6,000 | 5,000 | 5,000 |
| Central Texas Refining Co., Brownwood | 2,000 | 600 | 400 |
| Central Texas Refining Co., Luling | 2,500 | 1,400 | 1,500 |
| Col-Tex Refining Co., Colorado | 10,000 | 8,000 | 7,000 |
| Cosden Oil Co., Big Spring | 15,000 | 9,000 | 9,500 |
| Del Rio Refining Co., Del Rio | 5,000 | 3,000 | 2,500 |
| Grayburg Oil Co., San Antonio | 6,000 | 3,000 | 2,500 |
| Great West Refining Co., Big Spring | 8,500 | 3,500 | 3,600 |
| Gulf Oil & Refining Co., Sweetwater | 5,000 | 5,000 | 5,000 |
| Humble Oil & Refining Co., San Antonio | 5,000 | 2,600 | 2,700 |
| Humble Oil & Refining Co., McCamey | 15,000 | 8,000 | 8,000 |
| Misko Refineries, Inc., Laredo | 1,500 | 500 | 500 |
| Mid-Tex Refining Co., Midland | 2,500 | (*) | 300 |
| Pasotex Petroleum Co., El Paso | 10,000 | 9,000 | 9,000 |
| Pecos Valley Refining Co., Pyote | 8,500 | (*) | (*) |
| Pioneer Oil & Refining Co., Somerset | 1,500 | 1,000 | 1,000 |
| Richardson Refining Co., Big Spring | 6,000 | 3,000 | 3,900 |
| Rio Grande Oil Co., El Paso | 6,000 | 4,000 | 3,500 |
| San Angelo Refining Co., San Angelo | 2,000 | 500 | 500 |
| Sweetwater Oil & Refining Co., Sweetwater | 2,000 | (*) | 250 |
| The Texas Company, San Antonio | 3,000 | 2,500 | 2,500 |
| The Texas Company, El Paso | 1,500 | 1,000 | 1,000 |
| Tonkawa Petroleum Co., Pyote | 5,000 | 2,200 | 1,500 |
| Texas Mexican Oil & Refining Co., Laredo | 1,000 | 200 | 200 |
| Texas Petroleum Products Co., Somerset | 1,500 | 300 | 300 |
| Wickett Refining Co., Wickett | 2,500 | (*) | (*) |
| Total | 142,000 | 77,300 | 75,350 |

*Shut down.

(Continued on Page 172)

# Modern Methods Subdue "Wild Mary"

## Engineers, Field Men and Equipment Manufacturers Co-operate in Bringing Oklahoma City Well Under Control

By L. G. E. Bignell
*Petroleum Engineering Editor*

"Wild Mary" has been tamed. After running wild for 11 days the Indian Territory Illuminating Oil Co.'s No. 1 Mary Sudik, known to the workmen of the Oklahoma City Pool as "Wild Mary," was brought under control at 7:05 p.m. April 6 by the use of an outside cutting nipple or die that was made from a design suggested by field men assisting in the work of shutting in this well. Two previous attempts to shut in this well and bring it under control had failed, due mostly to the cutting action of the sand that the well was producing along with its enormous flow of gas and oil.

The well is located in NE NE SW, Section 31-11-2w, in the southern part of the oil pool that is adjacent to Oklahoma City on the southwest and blew in as a gasser on March 26 while the string of 3½-inch drill pipe was being pulled out of the hole after completing the well to a depth of 6,472 feet in the Wilcox sand.

The well was handled in the same manner as all other wells drilled in this field have been handled since the first few were drilled and the operators have become accustomed to the formations. A full description of the drilling operations was given in the January 30 issue of The Oil and Gas Journal.

The 7-inch, 24-pound casing had been set at 6,396 feet and cemented and the mud bailed out of the hole. The cementing job was tested and found satisfactory and the hole then reloaded with mud and drilled in.

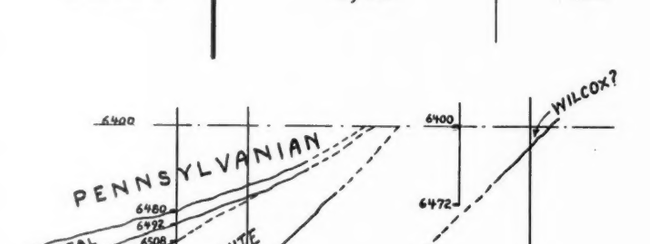
The well went directly from the Oswego lime or lower Pennsylvanian formation into the Wilcox sand of Ordovician age. This great unconformity is explained by the sketch shown in this article. From this drawing it will be noted that the No. 1 Mary Sudik well penetrated into the upper end of the Wilcox formation at a point where it had evidently been at one time exposed and eroded away.

### Reason for High Pressure

This condition will explain why this well has unusually high pressure and produced such large quantities of oil and gas. Geologists agree that this upper portion of the Wilcox sand that had been weathered would be softer and less cemented than that portion of the formation buried deeper under the other strata found to the west of this well.

This underground condition was unknown to the drillers at the time the well was drilled 72 feet into this formation, and it cannot now be established definitely whether there was a detrital zone above this upper end of the Wilcox sand. It might be there but the cuttings were so washed that it was impossible to identify it.

Sinclair Oil & Gas Co.'s No. 1 School Land No. 67, four locations to the west of No. 1 Mary Sudik, passed through detrital material, the lower member of the Viola lime series known as Black River formation, and a full section of the Simpson dolomite and lime before it entered the Wilcox.







*Sketch of the underground conditions in the southern part of the Oklahoma City Pool showing probable position of No. 1 Mary Sudik well in Wilcox formation. This sketch is drawn to scale.*

The well that is directly to the east of No. 1 Mary Sudik is Sinclair Oil & Gas Co.'s No. 1 Vencl, and it is producing from the Lower Simpson formation but it is reported as having passed through a small section of Wilcox formation but this stratum was not definitely identified because the cuttings from that portion of the hole were so badly washed that their definite determination was impossible.

### Regular Drilling Practice Followed

In drilling wells in the Oklahoma City Pool it has been the regular practice to set the 9-inch, 40-pound casing at about 5,220 feet and cement it with from 1,000 to 1,500 sacks of cement and then to reduce the hole to 8⅝-inch diameter and continue to about 6,250 feet where the 7-inch, 24-pound casing is set and cemented with about 250 sacks of cement and allowed to set for seven days.

The rotary mud that has been pumped into the hole back of the upper float used in the cementing operation is then pumped out and the casing tested for shutoff and tightness and the hole completed with 6⅛-inch bit. In completing the well the rotary mud is usually mixed to give not less than 10 pounds weight per gallon and this would make the bottom hole pressure of this column of fluid over 3,000 pounds per square inch. The pressure in the formation must have exceeded this for not only did it blow out the mud in the hole but 20 joints of 3½-inch drill pipe as well. This drill pipe with tool joints weighs 15.1 pounds per foot of length and if the average joint is estimated as 20 feet long the 20 joints would have a total weight of over 6,000 pounds to which should be added the weight of the bit.

The top of the hole was finished by cementing the 16-inch o.d. surface pipe in the 20-inch drill hole and also covering the bottom of the cellar with cement. The 9⅝-inch o.d. string of casing was carried by Larkin casing supports and this type of support also carried the 7-inch o.d string of casing. Above the upper end of this 7-inch casing a collar and short drilling nipple was placed and because of the lack of headroom in the cellar between the top of the 7-inch casing and the bottom of the rotary turntable no control head had been put in place.

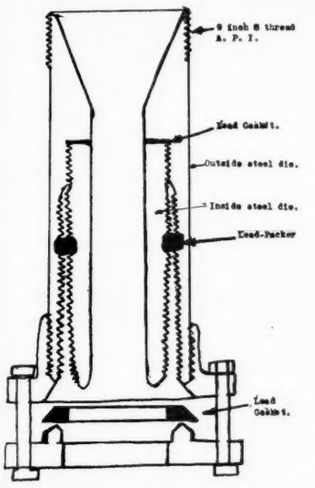
In other wells these drilling methods had proven satisfactory and the mud in the hole had held the oil and gas in check until the proper control devices had been installed at the top of the well and the mud was then bailed out until the formation pressure was enough to blow out the

balance of the mud fluid to the atmosphere and as soon as oil began to show it was turned into the oil and gas separators and the well was completed under control.

**Front Page Copy**

When the well first blew itself in it made nothing but gas but in about 24 hours it began to spray some oil and this gradually increased until it has been estimated that the well made as high as 1,000 bbls. of oil per hour with upward of 100,000,000 cubic feet of gas per day accompanying it.

Because of the fact that this well is located in one of the major pools now being drilled in this country and is close to a large city it quickly became front page news in papers all over the United States and stories and pictures of it were carried daily. These stories varied greatly in detail, because the officials and operators of the Indian Territory Illuminating Oil Co. were much more concerned with bringing the well under control than




*Sketch of die-nipple of the type used in final attempt to control No. 1 Mary Sudik well.*

in publicity and they have devoted all of their time to their work and have not as yet made any public statement of their efforts to subdue this wild well.

However, they did not lack advice of every kind and description and much time had to be devoted by some members of the operating staff in reading telegrams and letters and answering numerous telephone calls from well-meaning persons from all walks of life and from all parts of the country who desired to share in the glory of taming this well.

It seems that all of the oil man's troubles are not in handling a well of this kind but in trying to satisfy the desires of numerous persons who are offering much free advice. The men who actually knew about conditions realized that the I.T.I.O. officials, field force and engineers were capable of doing everything possible to be done under the circumstances. Homer Craig, a man who has had much

*Cameron Iron Works control head.*

experience in handling large wells in Mexico, was brought from Tampico, Mexico, by airplane and fast trains to advise with the men at the well and no expense was spared to bring it under control as quickly as possible but it was a hard fight largely because of the cutting action of the sand being blown out under very high velocity along with the gas and oil.

**Repair Methods Tried**

The first thing necessary to do to repair the damage and bring the well under control was to clear away the rotary turntable and remove the drill pipe that had been blown into the derrick, although this drill pipe was not removed immediately for it acted as a baffle and held the stream of oil in check to some extent during the first day or two of the wild flowing condition.

As the 7-inch drilling nipple was still in place it was decided to cut threads upon the upper end of it and screw on the master gates and crosses by which it was hoped that the well could be brought under control. In doing this work it was very difficult to hold the cutting tool in place and the threads were not well cut and under the high pressure of the gas and oil inside the 7-inch pipe that was built up when the master gate was closed this nipple burst and once a small opening was made the sand quickly cut away this pipe and this attempt to close in the well failed.

It was then necessary to remove the 7-inch drilling nipple and after it had been taken off it was found that the collar that had connected it to the upper end of the 7-inch string of casing was also damaged. A new collar and a 7"x14" long nipple was then screwed in place and the second attempt to close the well was made.

In this second trial a Shaffer control gate was used that had been prepared from a stock gate that was in the Tulsa warehouse of the Robert N. Atmore Co. by cutting out the rubber and steel rams of a standard 6⅝-inch gate to fit over the 7-inch pipe. In doing this work it was necessary to remove the bead from the rubber packer that fits snugly around the casing and this reduced the thickness of this packer so much that after the control gate had been placed over the 7"x14" nipple and tightened and the master gates closed the sand found some small opening and cut its way through. Rather than take any chance of cutting out the nipple the master gates were again opened and the well allowed to blow to the atmosphere.

To give some idea of the rapid cutting action of this sand it is stated that in one piece of 4-inch pipe used in trying to bring this well under control there was a small pit on the inside of the pipe where the sand first cut a small hole. It only took a few minutes of the sand to cut this pipe so badly that it was useless for further duty.

This loose sand is coming from the upper end of the Wilcox formation in large quantities and while the well was completed with the drill to 6,472 feet it seems quite safe to assume that it is now many feet below this point and has also enlarged the hole at the bottom to a cavity of some considerable size. All this accounts for the enormous flow of gas and oil for as this action went on the well was drilling itself into the producing zone and draining it of more and more of the gas and oil stored there.

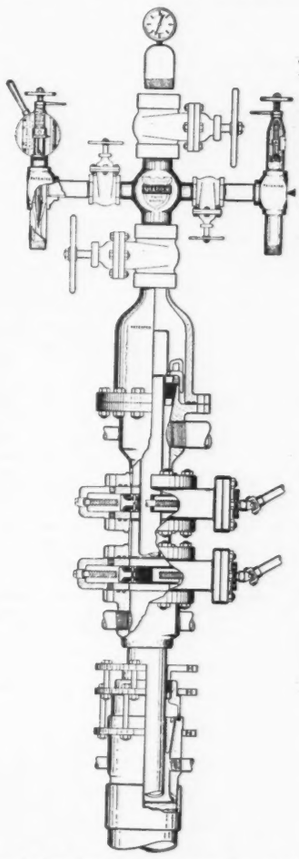
The operators were fortunate at all stages of this period in having the flow confined to the inside string of casing, for unlike some other large wells that have come in unexpectedly in other fields and broken out around the casing and cratered until there was no opportunity of bringing them under control again, this well has never produced except through the oil string.

**Third Attempt Successful**

After the second attempt to close in this well with the reworked Shaffer control gate had failed and before a new set of 7-inch steel rams and new rubber packer could arrive from the factory at Brea, Calif., by airplane, it was decided to try another method and a special die nipple was made for this purpose bye the American Iron & Machine Works Co. of Oklahoma City.

In order that no possible time should be lost the Hinderliter Tool Co. of Tulsa also was given an order for one of these special nipples and made it. This piece of equipment is shown in cuts and sketch and was finished early Sunday morning after an all night shift in the machine shop and sent to Oklahoma City by airplane, but did not reach there in time to be used.

The main difference between the nipples made by the American Iron & Machine Works Co. and Hinderliter Tool Co. is that the nipple that was used has only the outside cutting threads, while on the Hinderliter nipple there were both outside and inside cutting dies provided.



*Typical hookup of Shaffer control gates and fittings for high pressure wells as used in California fields.*

Both of these nipples were made from high grade hollow steel billets and after the dies were cut the threads were tempered and heat treated. On the Hinderliter nipple there are special lead packings between the outside and inside members into which the upper end of the

(Continued on Page 173)

# New Market for Gasoline Fraction

## General Motors Subsidiary Selects Pentane as Fuel to Be Sold Throughout Nation For Domestic Use

By C. O. Willson

A wide market for pentanes, a constituent of natural gasolines and refinery gasolines, is apparently assured in the recent announcement that the General Motors Corp. through a subsidiary, the Delco Light Co. of Dayton, Ohio, had started the distribution of a domestic fuel known as Delcogas.

The action of General Motors is another important step in the rapidly growing market for what are commonly known in the oil and gas trade as liquefied gases. Reports from all parts of the country show that these products are being viewed with favor by consumers who do not have natural gas or artificial gas available through pipe line distributing systems.

### Large Outlet

The action of General Motors in going into this field with its varied activities is of interest for several reasons. In the first place, the corporation already has the nation-wide sales and service organization to make the product available to consumers. The Delcogas will be sold by the same organization that for several years has been selling the individual electric light systems for farm homes, small towns and suburban sections not served from central power plants. The company now has 3,500 trained salesmen in this field. The Delcogas system will be sold and serviced by this organization.

Although no announcement has been made, it is understood that the pentane is being furnished the Delco Light Co. by the Phillips Petroleum Co. of Bartlesville, Okla. The latter company is the largest manufacturer of natural gasolines and during the past two years has been active on its own account in the manufacture and sale of the various grades of liquefied gases.

"Invention and production of Delcogas now rounds out the three fundamental services which Delco Light products make possible in creating truly modern homes outside the zone of city utility services," H. W. Arnold, general manager of the Delco Light Co., said. "The Delco Light business was founded in the belief that people outside the cities wanted and needed the fundamental benefit of electricity. That need was met by Delco Light. The second basic need was running water under pressure. D-L water systems were developed to meet that need. The third necessity for the modern home, gas, is now supplied through the amazing new product of General Motors and Delco Light inventive skill—Delcogas."

In deciding on pentane as its liquid fuel after several months of investigation, the subsidiary company has not followed the general trend of a number of oil and gas companies which have become active in this relatively new market. Most of these companies are using liquid propane as fuel. The butanes or a blend of butane and propane are also available although the largest outlet for the butanes has been in the industrial gas field.

The propane is desirable because of its low boiling points of from —45° to —40° F. The liquid compressed in steel containers readily vaporizes under all climatic conditions when released to atmospheric pressure so that no special equipment is required to transform the product from a liquid to a gas. There is the additional fact that propane is largely a waste product, not being desirable for any other purpose except as a fuel.

### Characteristics of Pentane

In choosing pentane the Delco Light Co. has selected a product of substantially different specifications which is reflected in sources of supply, the method of transportation and manner of utilization by the consumer. The specifications of products sold as pentane will vary somewhat but in general the gravity is from 93 to 95 A.P.I. It has an initial boiling point of 80° F. and an endpoint of 100° F. and weighs around 5¼ pounds per gallon.

The B.t.u. content is approximately 4,000 per cubic feet or 110,000 B.t.u. per gallon. This B.t.u. content compares with 2,500 per cubic foot for propane and 3,200 for butanes.

Due to the lower gravity and vapor pressure the transportation of pentane is much simpler than in the case of propanes and butanes. The latter two liquefied fuels require expensive tank cars of special design for bulk transportation and this situation is reflected in the care of handling in steel cylinders and other containers at consuming points. Only the ordinary care taken in handling the light gasoline fractions is necessary in the case of pentane.

### Method of Installation

In regard to the installation the following description is taken from the announcement of the Delco Light Co.:

"Delcogas is composed of three units —(1) the compressor, (2) the fuel storage tank, (3) the regulator.

"The compressor consists of a one-sixth horsepower electric motor, an endless V-belt drive from the motor, the air compressor, an automatic switch controlling the operation of the entire equipment, an oil reservoir, and an air reservoir or air storage tank. The fuel storage tank is a large container for the liquid fuel, which is buried at least 5 feet underground, 10 feet or more from the user's house. This underground location of the fuel tank assures a uniform temperature of the fuel.

"The regulator is a simple mechanism for controlling the gas pressure, and creating a positive and unvarying pressure of gas at the cooking or heating appliance in the home. The compressor unit is simple in design and construction, with a minimum of moving parts. It does not require frequent attention, because it has been built expressly with the thought that there shall be nothing to get out of order. It is ready for operation the instant gas is needed.

"Tanks for containing the liquid fuel from which vapor gas is made are supplied in three sizes. The initial requirements of liquid fuel are supplied the user without additional cost at the time he installs Delcogas.

"Briefly, Delcogas operates in this manner. The compressor runs, building up the small required air pressure in the fuel storage tank, buried underground. This pressure causes the liquid to throw off a gas which has all the properties of the best city gas. This vapor gas is then carried from the underground storage tank to the appliances in the home where it is used exactly as city gas."

### Carburetion Process

From this description it is apparent that the change from liquid to gas is based on a carburetion process. This is necessary because, unlike propane, the

(Continued on Page 174)

# Hobbs Assured Transportation

## Two Main Pipe Lines Soon to Be Completed Out of New Mexico Area. Reported Pipe Line Projects in West Texas

By L. E. Bredberg
*Fort Worth Bureau, The Oil and Gas Journal*

FORT WORTH, Tex., Apr. 5.—The new lime producing area of the Hobbs High area in the extreme southeast corner of New Mexico, Lea County, will soon see the completion of two main trunk lines out of the area, giving it assurance of transportation for the oil it produces, and establishing another source of production for the two pipe line companies which have announced plans to lay these lines.

As yet there is not a great amount of production developed in the Hobbs High area, but a vast acreage has been practically proven for production, and with a few more wells completed as producers, the limits will be extended. The field appearing to be good for production is 8 miles long and 2 miles wide now. One of the companies which is starting a line to Hobbs now has one producing well in the area and is drilling another, but the Atlantic Pipe Line Co.'s sister producing company, the Atlantic Oil Producing Co., has no production, although it has some leases in the area. The field is producing oil of around 36 gravity, better than that produced in the Lea area to the south, or in Winkler County, Texas, still farther south, and the oil does not carry such a high sulphur content as the Lea or Winkler Pools; therefore it will be easier and cheaper to handle, and more valuable on the market.

### Pipe Line Projects

The Humble Pipe Line Co. now has an 8-inch line running from Winkler County, Texas, north to Jal, N. M., and to its No. 1 Bowers, southwest of Hobbs, and the Texas Pipe Line Co. has a line from Winkler County to the Lea area, but nothing has been said of extending this line or running another line by The Texas Company to the Hobbs area. The Humble's line will be paralleled from Winkler County to Jal, and the line carried on to the Hobbs area, probably to be the first one to be completed to that area, although the Atlantic Pipe Line Co.'s 8-inch from its Midland tank farm will probably be completed within two months. This line will be 78 miles long, and will pass through Andrews County near Deep Rock Oil Co. and others' No. 1 Ogden, in Section 6, Block A-46, Public School Lands, the discovery well in which Atlantic Oil Producing Co. has a quarter interest, as well as a like amount of interest in offset and nearby acreage on which there are three other tests drilling at the present time by the Deep Rock Oil Co. If the pool proves of major, or even minor, proportions it will give the Atlantic company another source of production, and help fill its main line which runs from Winkler County through Midland to the Gulf Coast.

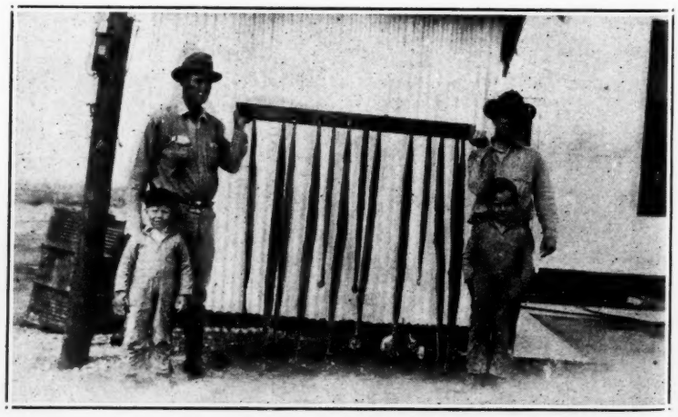
The gradual decline in production in Upton and Crane County Pools, especially the decline in the Hendricks Pool, Winkler County, has no doubt been the main reason for these two pipe line companies considering laying lines to New Mexico, and to the large potential producing area of that State, which now has no pipe line outlet, except the two lines mentioned northeast of Jal, nor which has any railroad by which crude oil could have been shipped, although the Texas & New Mexico Railway, a branch line of the Texas & Pacific Railroad, will soon complete its line into this new area and furnish the means of transporting crude oil, oil well supplies and material needed in a growing oil field.

The Atlantic Pipe Line Co. is starting the construction of three 55,000-bbl. steel tanks at Hobbs immediately, and will erect others as needed to handle the growing production. Its main tank farm is at Midland, Tex.

### Wild Territory

The terrain of the country which the lines will traverse is such that ditching and laying the lines will not furnish the greatest expense, but transportation of supplies and pipe will be the main problems and source of costs, for there are many miles of sand dunes which are almost impossible to cross with anything

(Continued on Page 176)



*Pipe line men get 13 rattlesnakes near Odessa.*

# Bad Smell Turned Into Useful Thing

## Experiments by Scientists Show How Natural Gas Companies Can Minimize Losses From Leaks by Using It as a Warning Agent

The old-fashioned method of finding a gas leak had its good points. All you had to do was strike a match. The insurance adjuster and the coroner looked after details. The new way, outcome of a series of experiments by government experts, relies for its efficacy upon the disquieting properties of a bad smell. Thus the capacity of science to utilize the humblest things of earth for the benefit of mankind is exemplified anew. But however valuable this departure may prove in reducing leakage losses and inspection costs, it would be useless to expect wild enthusiasm from a public that must hold its nose.

The fact that this natural gas leak detector has an impressive name—ethyl mercaptan is what they call it—does not lessen the sinister character of its odor. It has a dignified chemical formula, too, $C_2H_5SH$, but one good whiff will make any man forget it and run for the door.

The seriousness of the situation created by leaks in natural gas lines was recognized long ago. There was not only a destructive explosion now and then, sometimes with its human toll, but there was tremendous loss by gas companies resulting from waste of the gas itself. Gas distributing companies early discovered there was a startling discrepancy between the quantity of gas they received at the city gate and the quantity which the meters showed they delivered to consumers. This difference, representing thousands upon thousands of dollars annually, was accounted for by leaks. Besides this it happened all too frequently that gas which had passed through the meter and entered the piping system of a residence escaped as the result of faulty connections or other condition. This gas, almost odorless and thus giving virtually no warning of its presence, could accumulate, inviting wreck, asphyxiation or both.

### WHAT'S BECOME OF THE LIBERTY OUR FATHERS BOUGHT?

An insidious phase of this use of an offensive smell in discovering gas leaks is revealed upon thoughtful consideration. Gas is a time-honored substitute for such crude lethal agents as the rope, the shotgun and the poison pill among persons who get tired of living. But a man might as well think of going to sleep with a mess of spoiled cabbage under his nose as of trying to remove himself from earth with this evil-smelling gas in his nostrils. Are not scientists about to take from the common people one of the few remaining liberties bought at Bunker Hill and Brandywine?

**Value of Detector Recognized**

It was recognized that some method of detecting gas leaks promptly and safely would minimize one of the most formidable problems with which the industry had to deal. The idea of odorizing the gas was hit upon as possessing peculiar merit. It would make humanity's nose, through countless centuries symbol of prying inquisitiveness, a savior. The moment a gas consumer caught a villainous smell about the house not readily accounted for otherwise he would know it was time to telephone the plumber.

Doubtless the originators of this mode of leak detection considered at first the feasibility of making the smell a pleasant one, like lilies of the valley for instance or new mown hay, but abandoned the idea as impractical. A charming perfume would not rouse one to instant action. A foul smell would.

So a group of scientists in the United States Bureau of Mines, skilled in the mysteries of the chemical laboratory, set about to find an evil-smelling gas so like natural gas in specific gravity and other properties that when put into a line with the latter it would mix with it perfectly. It was imperative that the detector gas be so thoroughly miscible with the other that if any of the natural gas escaped some of the detector gas would escape with it. Obviously if the detector gas were heavier than the natural gas it would travel along the bottom of the pipe and a leak in the top of the pipe might not release any of the warning gas at all. Likewise if it were lighter than the natural gas a leak in the bottom of the pipe might remain unobserved.

R. R. Sayers, A. C. Fieldner, W. P. Yant, R. D. Leitch and S. J. Pearce were the experts who took up the task of finding the kind of gas needed and in the course of their experiments they produced some gases of arresting qualities. For example one product is said to have caused a tingling sensation in the nostrils, making the subject sneeze so long as he remained in the affected area. This

(Continued on Page 212)

# More Natural Gasoline in Venezuela

## Lago Petroleum & Transport Corp. Building Three Plants. Four Plants Now Operating. Unusual Operating Conditions

NEW YORK, Apr. 5.—Venezuelan oil producers have not yet developed their field operations to the point where they have gone in very heavily for natural gasoline manufacture, and while there is a limited output of the product at present operators are just getting around to the point where they are going in for this recovery in a serious way.

Lago Petroleum & Transport Corp., a subsidiary of the Pan American Petroleum & Transport Co., leading American operator in Venezuela, has started the construction of three natural gasoline plants, but aside from this development, none of the other companies operating in that country are known to be contemplating expansion of their natural gasoline operations.

There are four natural gasoline plants in operation in Venezuela at the present time, and completion of Lago's construction program will bring the number to eight. British Controlled Oilfields has an absorption plant at El Mene, Venezuelan Oil Concessions, Ltd., has plants at La Rose and Mene Grande, and Caribbean Petroleum has what is reported to be the largest plant in Venezuela located at Mene Grande.

Lago is constructing one plant at La Rosa and two at Lagunillas. These absorption plants will have aggregate capacity of about 35,000,000 cubic feet per day. The Lago plants will be built on concrete platforms in Lake Maracaibo and will be located about 4,000 feet from shore. One plant, already partially completed, is shown in the accompanying illustration.

Output of natural gasoline in Venezuela thus far has been used almost exclusively for lightening crude oil and has been mixed with the crude before shipment to tidewater.

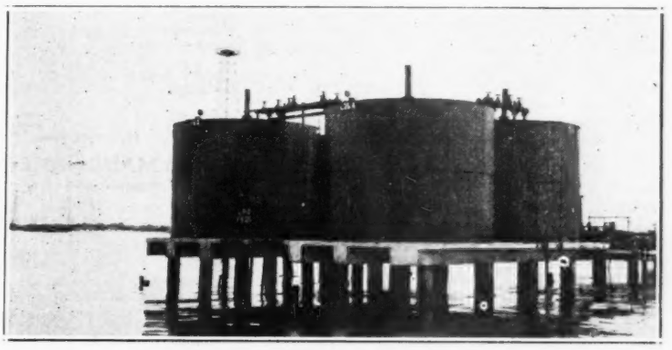
**El Mene Field**

Crude produced in the El Mene Field is reported to have the highest natural gasoline content of any Venezuelan oil, yielding an average of 2 gallons per 1,000 feet, or better. Lagunillas averages approximately 0.6 gallon per 1,000 feet, with the yield in the La Rosa Field running between 0.6 and 1 gallon per 1,000 cubic feet.

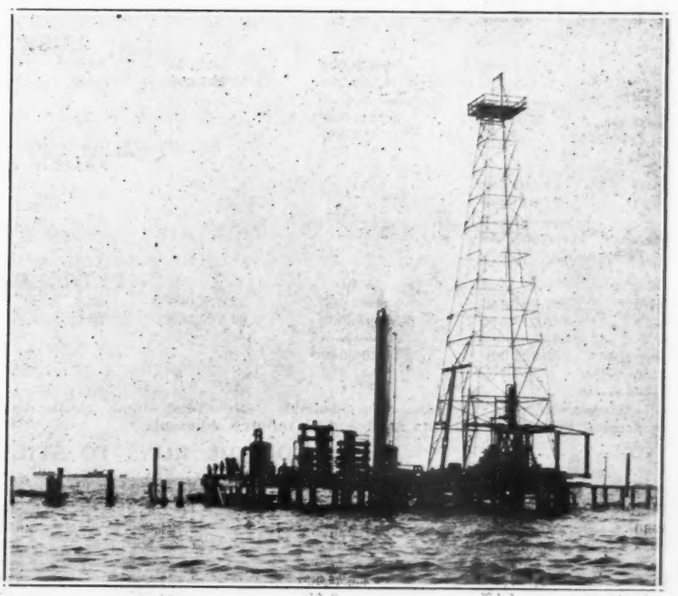
Venezuelan gasoline produced by topping requires considerable natural gasoline blended with it to bring it up to specifications, but Venezuelan gasoline produced by cracking, it is understood, does not require this mixture. In as much as the greater proportion of the Venezuelan output is now being cracked in the gasoline marketing process, there is no crying need for supplies of natural gasoline in that country. Lack of any urgent need for natural gasoline, coupled with the fact that field development work and the proving up of structures has occupied the greater part of the time and attention of operators in Venezuela, has not been conducive of any general campaign for natural gasoline extraction.

With respect to natural gasoline production in other South American countries, it is reported that little effort has been made in the direction of the building up of a natural gasoline producing industry. Aside from the lack of necessity for natural gasoline supplies in these countries, the production tax situation, it is believed, is by no means an insignificant factor in the relegation of natural gasoline to the background.

Some of the South American producers have been fairly heavy buyers of natural gasoline in the American market during the past few years, and it is indicated that operators requiring this gasoline will continue buyers, to a large extent, for the bulk of their requirements for this product.



*Flow station of the Lago Oil & Transport Corp. on concrete platform in Lake Maracaibo where oil is flown from wells for settling and gauging.*



*Natural gasoline plant of the oil absorption type under construction by the Lago Oil & Transport Corp. in Lake Maracaibo at La Rosa.*

# Government Data Reflect Improvement

## Rate of Increase in Crude Oil and Gasoline Stocks First Two Months Less Than Last Year

By C. O. Willson

Both the crude oil and refining branches have been contributing to an improved statistical situation in the oil industry according to the latest report of the Bureau of Mines which covers operations up to March 1. A study of the Government's reports for January and February shows that despite the general pessimism that prevailed during that period constructive factors were at work which have made possible the improved conditions apparent over the past three or four weeks.

A study of the Government's report on crude oil supply and demand for February led to the conclusion that the curtailment program in crude oil production made effective in March has brought an end to the excess supplies reported the first two months of the year with the certainty that in some areas withdrawals from storage are being made.

While the refinery situation from the standpoint of current supply and stocks is not as favorable as it might easily have been through a small additional curtailment of operations the first three months of the year, operators as a group have kept their gasoline output in line with the demand better than they did last year. If this trend continues, they should be in a position to take advantage of the improved crude oil situation regardless of excess gasoline storage which is largely confined to California and a few scattered operators east of the Rocky Mountains.

A check of the data given in the accompanying table for the first two months of 1930 and 1929 shows that most of the troubles so far this year are "hang-overs" from the fall and winter months of 1929. So far as crude oil is concerned there has been relatively little excess since the latter part of October, 1929, when a determined effort was made by Mid-Continent and California operators to bring the supply in line with the demand. The California situation was out of hand for a time late in the year and stocks there continued to increase but east of California the small accumulations would probably have not caused any trouble.

Refiners, however, in November and December of last year failed to follow the lead of the producers and large quantities of gasoline were run to storage, discounting as far as markets were concerned any improvement in the crude oil situation, bringing lower prices in January for both crude oil and gasoline.

Due to this development which was reflected in the fact that gasoline stocks at refineries were approximately 10,000,000 bbls. greater at the end of 1929 than they were the year before, a program was outlined for 1930 which called for at least a temporary halt in the rapid expansion of refinery output, particularly gasoline. In line with this program, the point was emphasized that the crude oil supply would have to be less in 1930 than it was in 1929. Due to the excess accumulations in 1929 and the greater recovery of gasoline from crude oil it was felt that the 1930 demand for crude oil would be little more than it was in 1929.

### First Two Months

It is of interest to check the Government's data for the first two months in the light of this 1930 program. As regards crude oil, as shown in the table, the total supply (domestic production plus imports) the first two months totaled 163,659,000 bbls., a decrease of 9,104,000 bbls., when compared for the same period in 1929. Of this total 5,320,000 bbls. are accounted for by smaller imports and the remaining 3,792,000 bbls. by a decline in domestic production.

This reduction in crude oil imports from 256,000 bbls. daily the first two months of 1929 to 166,000 bbls. the same period this year is a continuance of a trend which became apparent last year. It has been brought about primarily through the expansion of refining facilities in South America by two major companies.

In the over-all picture so far as markets are concerned, this decline in crude oil imports has little significance due to the fact that imports of refined products from South American refineries have increased. Gasoline imports the first two months of this year totaled 2,032,000 bbls., an increase of 1,127,000 bbls., or 124.5 per cent, over the same period last

(Continued on Page 85)

## CRUDE OIL AND REFINERY PRODUCTS SITUATION SUMMARIZED

(Bureau of Mines Reports—First 2 Months 1930 and 1929)

### SUPPLY AND DEMAND—CRUDE OIL (Bbls.)

| First 2 months | Total supply | Total demand* | Excess Supply | Excess Pct. | Domestic production | Imports | Domestic Demand* | Exports | Stocks Feb. 28‡ |
|---|---|---|---|---|---|---|---|---|---|
| 1930 | 163,659,000 | 159,312,000 | 4,347,000 | 2.7 | 153,880,000 | 9,771,000 | 155,773,000 | 3,539,000 | 533,286,000 |
| 1929 | 172,763,000 | 158,267,000 | 14,496,000 | 9.1 | 157,672,000 | 15,091,000 | 154,617,000 | 3,650,000 | 499,897,000 |
| Increase | †9,104,000 | 1,045,000 | | | †3,792,000 | †5,320,000 | 1,156,000 | †111,000 | 33,389,000 |
| Increase | †5.2% | .6% | | | †2.4% | †35.2% | .7% | †3% | 6.7% |

*Derived from government data for comparative purposes. Includes some California residual fuel oil. †Decrease. ‡Includes California residual fuel oil.

### SUPPLY AND DEMAND—REFINERY PRODUCTS—GASOLINE (Bbls.)

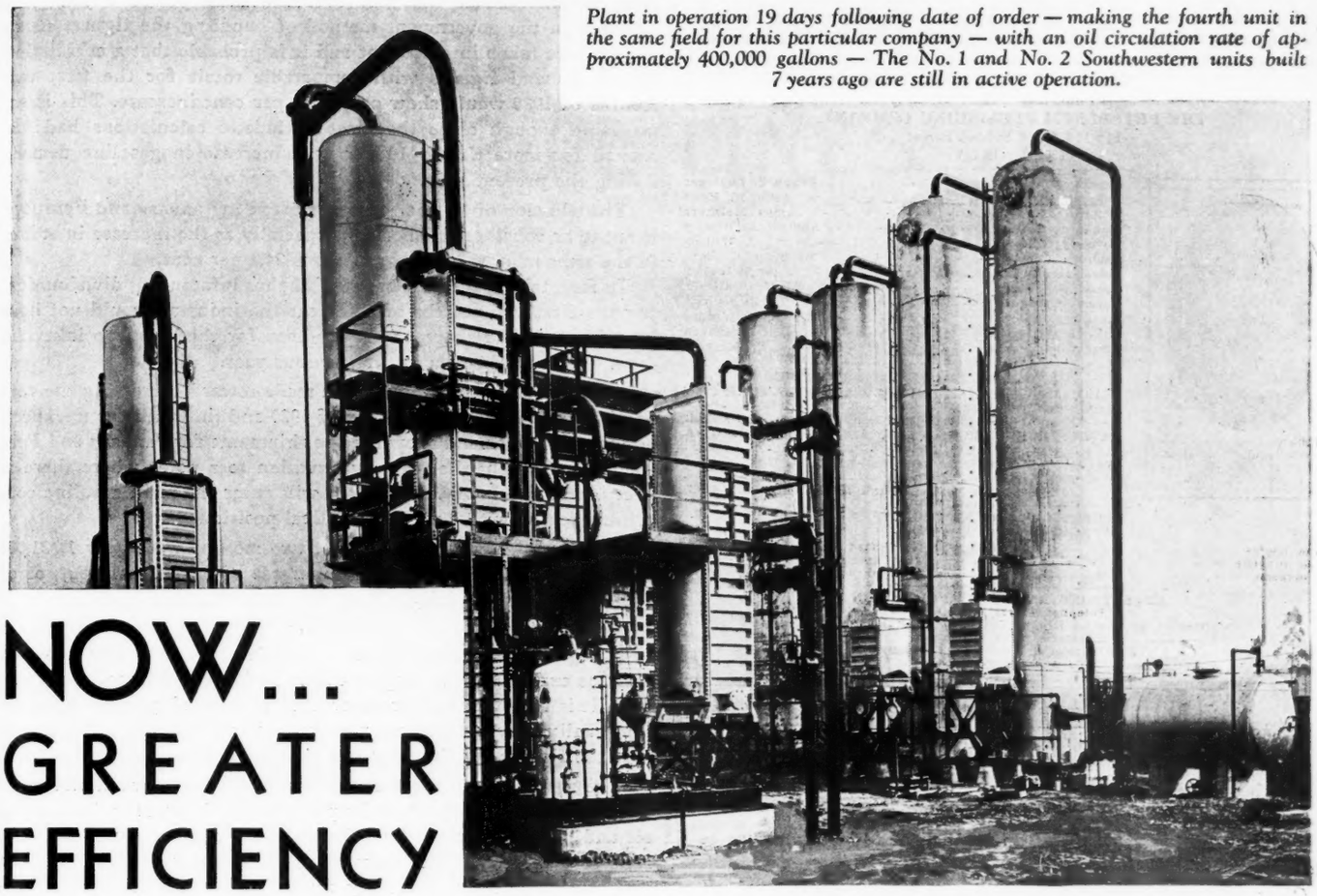
| First 2 months | Total supply | Total demand | Excess Supply | Excess Pct. | Domestic production | Imports | Domestic Demand | Exports | Stocks Feb. 28 |
|---|---|---|---|---|---|---|---|---|---|
| 1930 | 72,635,000 | 62,538,000 | 10,097,000 | 16.1 | 70,603,000 | 2,032,000 | 52,240,000 | 10,298,000 | 53,229,000 |
| 1929 | 67,185,000 | 53,866,000 | 13,319,000 | 24.7 | 66,280,000 | 905,000 | 45,378,000 | 8,488,000 | 45,729,000 |
| Increase | 5,450,000 | 8,672,000 | | | 4,323,000 | 1,127 | 6,862,000 | 1,810,000 | 7,500,000 |
| Increase | 8.1% | 16% | | | 6.5% | 124.5% | 15.1% | 21.3% | 16.4% |
| **KEROSENE** | | | | | | | | | |
| 1930 | 8,901,000 | 9,375,000 | *474,000 | *5.3 | 8,887,000 | 14,000 | 6,202,000 | 3,173,000 | 8,565,000 |
| 1929 | 9,193,000 | 9,984,000 | *791,000 | *8.6 | 9,135,000 | 58,000 | 6,475,000 | 3,509,000 | 8,210,000 |
| Increase | †292,000 | †609,000 | | | †248,000 | †44,000 | †273,000 | †336,000 | 355,000 |
| Increase | †3.3% | †6.5% | | | †2.7% | †76% | †4.4% | †10.6% | 4.3% |
| **LUBRICATING OIL** | | | | | | | | | |
| 1930 | 5,611,000 | 5,028,000 | 583,000 | 11.6 | 5,607,000 | 4,000 | 3,250,000 | 1,778,000 | 8,852,000 |
| 1929 | 5,453,000 | 5,259,000 | 294,000 | 5.6 | 5,448,000 | 5,000 | 3,272,000 | 1,987,000 | 8,534,000 |
| Increase | 158,000 | †231,000 | | | 159,000 | †1,000 | †22,000 | †209,000 | 318,000 |
| Increase | 2.8% | †5.6% | | | 2.9% | †20% | †.7% | †10.5% | 3.7% |
| **FUEL AND GAS OIL** | | | | | | | | | |
| 1930 | 69,307,000 | (‡) | | | 64,398,000 | 4,909,000 | (‡) | 6,130,000 | 34,280,000 |
| 1929 | 71,970,000 | | | | 71,169,000 | 801,000 | | 6,494,000 | 30,118,000 |
| Increase | †2,663,000 | | | | †6,771,000 | 4,108,000 | | †364,000 | 4,162,000 |
| Increase | †3.8% | | | | †10.5% | 512% | | †5.9% | 13.8% |
| **PETROLEUM WAX (Lbs.)** | | | | | | | | | |
| 1930 | 107,691,000 | 85,613,000 | 22,078,000 | 25.8 | 103,320,000 | 4,371,000 | 34,526,000 | 51,087,000 | 213,487,000 |
| 1929 | 115,014,000 | 85,305,000 | 29,709,000 | 34 | 108,912,000 | 6,102,000 | 31,881,000 | 53,424,000 | 140,053,000 |
| Increase | †7,323,000 | 308,000 | | | †5,592,000 | †1,731,000 | 2,645,000 | †2,337,000 | 73,434,000 |
| Increase | †6.4% | .4% | | | †5% | †39.6% | 8.3% | †4% | 52.4% |

*Excess demand. †Decrease. ‡Not available. Note—Total supply equals domestic production plus imports. Total demand equals domestic demand plus exports. Data on demand for refined products are based on refinery shipments.

### CRUDE OIL RUNS TO STILLS AND TOTAL ALL OILS (Bbls.)

| First 2 months | Total crude to stills | Domestic crude to stills | Foreign crude to stills | Natural gasoline production | Gasoline recovery crude oil‡ | Total supply all oils* | Total demand all oils* | Stocks all oils Feb. 28* |
|---|---|---|---|---|---|---|---|---|
| 1930 | 152,577,000 | 142,973,000 | 9,604,000 | 8,658,000 | 45.66% | 179,808,000 | 169,374,000 | 692,878,000 |
| 1929 | 150,856,000 | 138,351,000 | 12,505,000 | 7,720,000 | 43.88% | 182,757,000 | 161,293,000 | 635,927,000 |
| Increase | 1,721,000 | 4,622,000 | †2,901,000 | 938,000 | 1.78% | †2,949,000 | 8,081,000 | 56,951,000 |
| Increase | 1.1% | 3.4% | †23.2% | 12.1% | | 1.6% | 5% | 8.9% |

*Total all oils includes crude oil, refined products, natural gasoline and benzol. †Decrease. ‡Includes natural gasolines blended at refineries.



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## AN ENCOURAGING OUTLOOK

The biggest hope for a good year in the oil industry is that the industry has thoroughly learned its lesson.

That was the terse reply of an oil man of long experience to a question about the outlook for 1930.

Oil producers, he said, have not only tested the conservation policy but have become so convinced of its necessity that they have stuck to it persistently despite all backsets, and refiners are coming to the same sensible conclusion as shown by the improvement in their position during the first two months of the year revealed in the Bureau of Mines report just issued.

Curtailment of overproduction of crude and refined products is the cause and keynote of the better prospect for the industry.

The production of crude oil has been brought practically in line with demand. Total production and imports of crude in the first two months of this year was 5.2 per cent less than for the same period of last year.

Domestic production was 3,792,000 barrels less and imports of crude were 5,320,000 barrels or 35.2 per cent less. This remarkable reduction in imports of crude was of course the reflection of the increase in the refining of foreign crude abroad and the increase of gasoline imports by 125 per cent or 1,027,000 barrels in the two months. Imports of gas and fuel oil also increased, from 801,000 barrels to 4,909,000 barrels, but the net result was to leave the import situation just about where it was last year allowing for the change in character of imports.

So far this year importers have done what they said they would, kept imports to the same level as in 1929. Domestic crude producers are doing their best to do the same and the prosperity of the industry this year will be according to their success in avoiding overproduction.

The refining division ended the year with 10,000,000 barrels excess gasoline compared with the end of 1928. At the end of the first two months of 1930 stocks were only 7,500,000 barrels larger than on the same date last year.

So, although gasoline stocks stood at 53,229,000 barrels, the highest on record, on March 1, the rate of gain had been reduced materially due to the growing realization of refiners that they were endangering their market by overproduction.

The most remarkable feature of the government report is the statement that gasoline demand increased 16 per cent during the first two months of the year over the same period a year ago. Changes in the government method of handling the figures must, however, be taken into account and it is probable that a correlation of the demand figures with comparable totals for the first two months of 1929 would show only a 13 per cent increase. This is remarkable enough since the most optimistic calculations had not looked for more than a 10 per cent increase in gasoline demand during the present year.

The addition of 16.1 per cent to storage in January and February is not to be considered abnormal, especially as the increase in stocks in the same months of a year ago was 24.7 per cent.

In fact, taking the operations of the manufacturing division during the first two months of this year the industry would not have been in at all bad shape had it not been for the handicap inherited from excess production in the previous year.

An admirable advance has been made toward correcting the conditions that prevailed at the end of 1929 and this with the unexpected increase in demand shown in the shipments for January and February has brought the refinery situation to a point where there is every reason to hope the industry will enter the main gasoline consuming season with a sound statistical position.

Crude runs to stills in the first two months were only 1,721,000 barrels more than a year ago, an increase of but 1.1 per cent, or of about 30,000 barrels daily.

While domestic crude runs showed a gain of 3.4 per cent, runs of foreign crude decreased nearly 3,000,000 barrels or 23.2 per cent. This, as explained, was largely offset by increased imports of gasoline. It is to be noticed, however, that exports of gasoline were exceptionally heavy in the two months, the increase being 21 per cent over the figures for the same two months of 1929.

The new trend to avoid overproduction of gasoline is not without its benefits in regard to the production of kerosene, lubricating oil and petroleum wax, the principal by-products. Curtailment of runs to demand will not only stabilize the motor fuel market but will also bring about a healthy condition in the markets for these other products.

Both the domestic and export demand for kerosene continued the tendency of the past few years. Domestic demand was 4.4 per cent less and exports 10.6 per cent less, although stocks were increased 4.3 per cent.

Continuance of the decline in demand will, of course, mean lower prices unless supply is kept in line with demand.

Largely the same situation is observed in regard to lubricants. Despite the increased number of motor vehicles and the rapid expansion in industry the total consumption of lubricating oils shows little change and for the first two months of the year both domestic and export demand were less than a year ago.

Petroleum wax went through last year with a tremendous surplus and this condition has not been materially improved this year, the excess of supply over demand for the first two months being 22,078,000 pounds or 25.8 per cent, against an excess of 34 per cent in the same period of 1929.

Facts like these are the background for the picture of the oil industry's operations which must be studied from every angle.

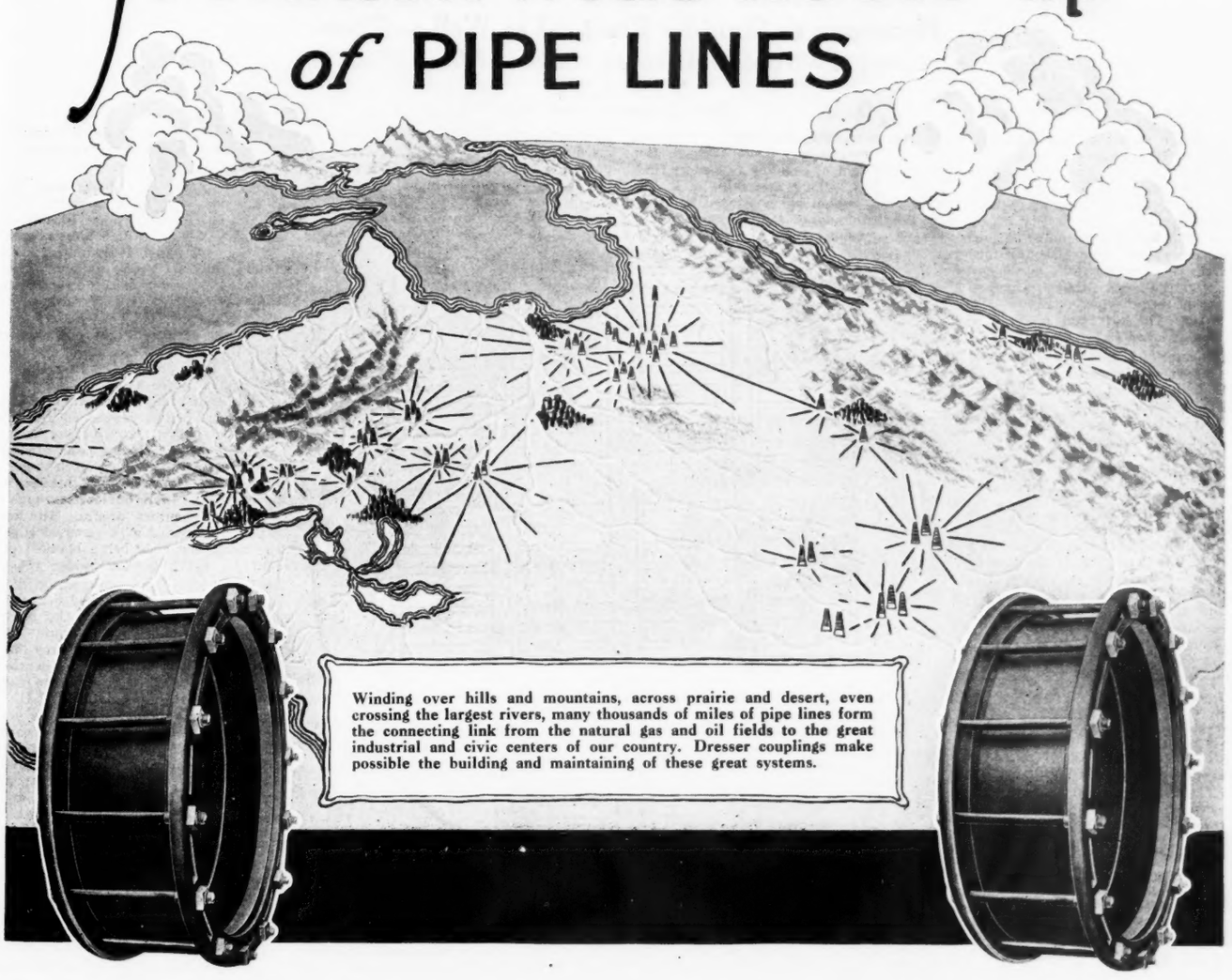
Viewed as a whole the situation today is most encouraging. With the possible exception of Southwest Texas and the Gulf Coast crude production is well in hand. The refining division is now fully awake to the danger of entering the season with excessive stocks.

The more than 50 per cent gain in gasoline demand in the first two months over what had been estimated suggests the possibility that we may have another increase of 50,000,000 barrels in consumption this year as we did last year, instead of the 35,000,000 barrels calculated at the first of 1930.

Such a gain could very well be taken care of without increasing crude runs to stills and should in no way encourage any weakening in the curtailment program now under way.

In short, as one of the leaders of the industry said recently, "Oil men have a God-given opportunity at this time if they will see the light and co-operate and co-ordinate in carrying out a sensible policy in operations."

# A Nation Wide Hook-Up of PIPE LINES



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# Factors in Design of Bubble Plates

## Necessary to Consider Practical as Well as Theoretical Features. Discuss Seven Main Phases

By O. C. Brewster
Consulting Engineer, Casper, Wyo.

In the design of bubble plates for any particular service of fractionation (or absorption) there are a number of major factors to be considered, and each has its influence on the design. Some of the features of design must of necessity be affected by what has been found to be good practice, others we know should tend toward the certain goal which theory points out as the ideal, although practical considerations usually force a compromise with theory. The principal features of design may be listed as below:

1. Diameter of tower.
2. Arrangement of caps.
3. Distribution and flow of liquid.
4. Arrangement of plates with respect to adjacent plates.
5. Type of bubble caps.
6. Number of caps required.
7. Overflows.

### Diameter of Tower

The diameter of the tower which, of course, defines the diameter of the bubble plate is a function of the amount of vapor to be handled and may be fixed either by the limiting vapor velocity allowable in the free space between plates or by the requirements of the plate itself in providing room for the required number of bubble caps, the overflow pipes, and the varying amount of waste space inherent to different types of cap. The minimum tower diameter may be determined on the basis of the velocity of the vapor rising through the free space between plates. This is largely a matter of what is good practice although the subject is well worth the application of some basic principles. The velocity must be kept below that at which serious entrainment, i.e., the carrying of liquid mechanically from one plate up to that above, occurs as this effect detracts from the efficiency of the column. The general opinion in the industry appears to be that vapor velocities of from 1 to 2 feet per second constitute good practice and very little regard is given to the different conditions set up by different vapors. The tendency of a moving vapor to entrain particles of liquid is largely a function of its density. if we assume the particles to be of uniform size, and we may be dealing with vapors such as steam with a small amount of oil at very high temperatures or straight oil vapor at greatly reduced pressures having specific weights of only 0.02 pounds per cubic foot, or normal gasoline vapor at atmospheric pressure weighing about 0.20 pounds per cubic foot, or heavier vapors at high pressures weighing from 1 to 2 or more pounds per cubic foot. In general, it may be said that the tendency to entrain varies approximately as the square root of the vapor density, assuming that the liquid particles involved are of the same diameter and specific gravity and that the density of the vapor is small with respect to that of the liquid. Thus we may set up an approximate rule that,[1]

$$V = k/\sqrt{s}$$

where $V$ = velocity of the vapor,
$s$ = density of the vapor under operating conditions,
and $k$ = a constant.

Now, if we are able to set up some value of k from practice covering long experience, we have a basis for determining permissible velocities in general. In the fractionation of gasoline we have had long experience and here velocities of from 1 to 2 feet per second have been found satisfactory and this probably accounts for the fact that this range of velocity is used by many for all conditions. Using a velocity of 1.5 feet per second as representing good average practice, and 0.2 pounds per cubic foot as the specific weight of gasoline vapor, we find k to be 0.67. Using this value of k, for very light vapors as mentioned, consisting largely of superheated steam or highly evacuated vapors with a specific weight of 0.02, we find a permissible velocity of 4.7 feet per second while for the heavy vapors cited having a specific weight as high as 1.0 pound per cubic foot the velocity indicated is only 0.67 feet per second. Judgment must, of course, be used in fixing velocities and it is a good rule to remember that it is far better to have the tower larger than necessary than too small.

[1]See Principles of Chemical Engineering, Walker, Lewis and McAdams, p. 311, for discussion of rate of settling.

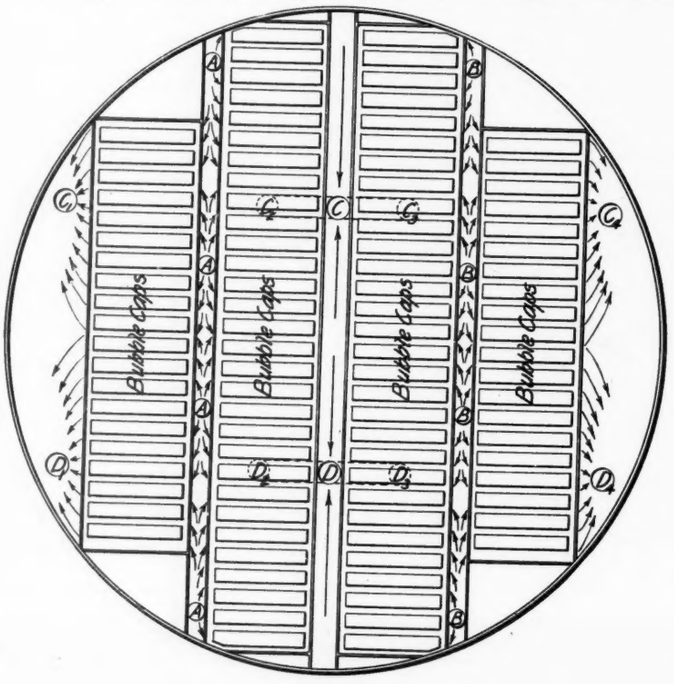
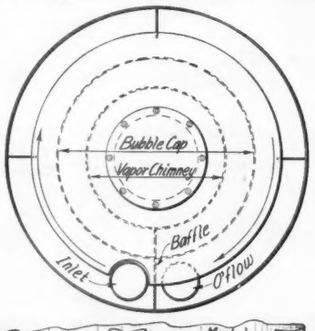



Figure I.



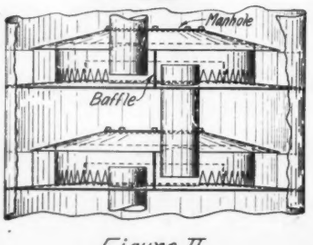




Figure II.

It is not within the scope of this paper to discuss the calculation of the actual vapor volumes, it being assumed that these factors are known beforehand. These considerations thus determine the minimum allowable tower diameter. It very often happens that the design of the bubble plate itself requires enlargement of the diameter in order to accommodate the caps, overflows and other parts of the plate.

### Caps and Flow of Reflux

Many of the other factors that enter into the design of the plate are so closely inter-related that they cannot well be considered individually. In a previous article[2] the writer developed a conception of an ideal plate somewhat different from that commonly accepted as the ideal and having considerably more effectiveness. The requirements of this modified ideal are briefly that the entire body of liquid shall successively contact and come to equilibrium with infinitesimal increments of the vapor. With any given number of slots through which vapor is bubbling, or, more broadly, with any given length of bubble cap edge under or through which vapor is bubbling, we approach nearer and nearer to this goal as we reduce the number of parallel streams of liquid flowing across the plate and thus increase the number of successive contacts.

The nearest we can approach to the ideal condition is to have all of the liquid flow in one stream progressively along the entire bubble cap edge. This has been done successfully in certain special cases of plates designed by the writer but cannot be conveniently accomplished in the majority of designs as will be pointed out later. The number of successive contacts may, however, be increased in many cases with beneficial results.

Various types of bubble plates with which the writer has come in intimate contact or himself designed may well be described at this point and discussed from the point of view of the requirements of the ideal type of flow.

Figure 1 shows a plate used by one company for its larger installations, with diameters running up to 16 feet. This elaborate design, which shows considerable ingenuity in layout, indicates an obvious effort to secure as many parallel streams as possible with no regard shown for the principle of successive contacts. The liquid flows on to the plate from that above through the eight downcomers A and B, running into the two troughs shown. The sides of each trough are provided with holes opposite the channels formed between the rectangular bubble caps which are arranged in four rows. The reflux flows through these holes, the intention being for the same amount of reflux to flow through each hole, and thence through the space between caps where the vapor bubbles through the liquid and contact occurs. The bubble caps are provided with serrated edges on the sides, the ends being blanked off so that all vapor bubbles under the sides only.

The reflux, having passed between one pair of caps, flows over the overflow weirs which maintain the liquid level in the cap sections and passes into the two side overflow zones or to the central overflow trough whence it flows to the six downcomers $C_1$, C, $C_4$, $D_1$ D, and $D_4$. The downcomers, C and D, from the central trough are branched below the plate as shown and deliver reflux to the plate below through $C_2$, $C_3$, $D_2$, and $D_3$. The arrangement is such that the four pipes, $C_1$, $C_2$, $C_3$, and $C_4$ are in position to feed one trough of the plate below which is turned 90 degrees with respect to this plate and $D_1$, $D_2$, $D_3$, and $D_4$ feed the other trough.

The proponents of this design claim great uniformity of contact between liquid and vapor on all portions of the plate. This is undoubtedly true if uniform distribution of reflux is obtained. This seems very unlikely, however, particularly where small quantities of reflux are involved. In one installation (14 feet in diameter) the amount of liquid flowing was so reduced by robbing the column with side streams that the flow on the three bottom plates of the tower was such that the volume of each of the nearly 100 separate parallel streams of reflux was between 0.1 and 0.2 gallons per minute. There seems to be little chance of accurately splitting the liquid flow into a multitude of tiny streams by any such ordinary methods as those employed. This feature, coupled with the fact that the liquid flow is made as short as possible in disregard of the principle that it should be as long as possible, and the fact that the fabrication and installation are rel-

(Continued on Page 208)

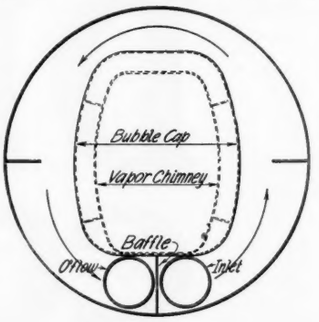
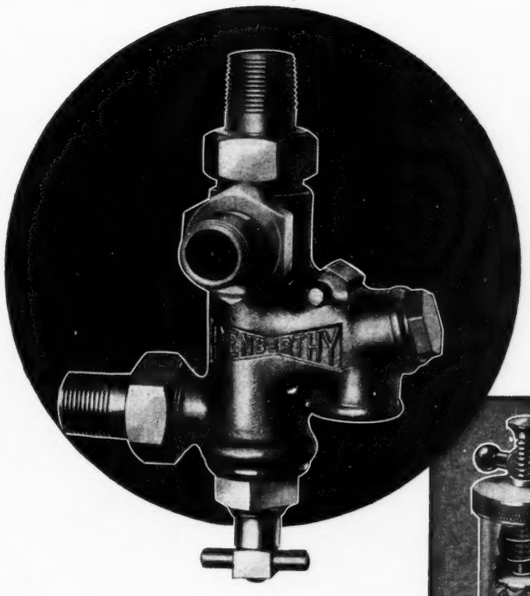


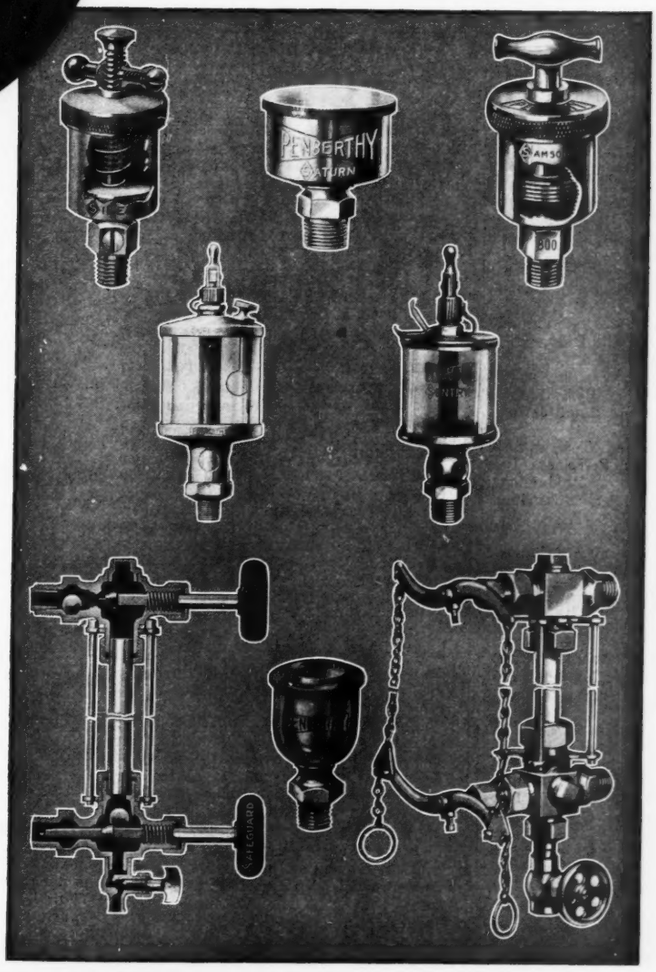

Figure III

[2]The Oil and Gas Journal, April 3, 1930, page 41.



# ECONOMY SUGGESTS

PENBERTHY PRODUCTS

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# ENGINEERS GATHER AT MIDLAND FOR SPRING MEETING OF A.P.I.

By L. G. E. Bignell
*Petroleum Engineering Editor*

MIDLAND, Tex., Apr. 9.—Field men and production engineers for the oil companies of the Permian Basin area of West Texas are gathering here for the spring meeting of the southwestern district of the A.P.I. Division of Production to be held in the Sharbauer Hotel starting at 9 o'clock Thursday morning.

The previous meeting of this division was held at Galveston in September where it was decided to hold the spring meeting in this city so that visitors from other fields, who will attend in a considerable number, may have an opportunity to see the principal pools of this much discussed area.

W. H. Meier, engineer for the Atlantic Oil Producing Co., of Dallas, will preside as chairman and call the meeting to order after registration is completed.

Several interesting papers have been prepared by such well known men as L. E. Barrows, division manager of the North Central Texas division of The Texas Company; E. V. Foran, petroleum engineer for Fain-McGaha Oil Co.; E. G. Allen, general superintendent of the southern division of the Shell Petroleum Corp.; and J. R. McWilliams, chief engineer for the Skelly Oil Co. and chairman of the A.P.I. Production Division.

Midland promises to show the visitors a real western welcome and the committee under Charles W. Alcorn has arranged for field trips for those interested to Big Lake and Yates Pools for Friday.

W. W. Scott, chairman of the nominating committee, will make his report and the officers for the ensuing year will be elected during the session Thursday afternoon. On Thursday evening there will be a dinner in the ballroom of Hotel Sharbauer.

At this time West Texas offers many opportunities to see numerous methods of operation and the Yates Pool stands out as a shining example of the unit plan operation as well as being noted for its cleanliness and orderly operation. R. W. Richmond, umpire for the Yates area, will personally assist in conducting the visitors through that area while Mike Griffith and J. S. Posgate of the Big Lake Oil Co. will make the visitors to their pool in Reagan County feel at home.

It is also possible that arrangements will be made to take visitors to the new pool in Ector County about 45 miles west of Midland on the Bankhead Highway if anyone desires to inspect drilling operations there.

### OIL MAN'S CALENDAR

April 5-9—New York, Hoboken, N. J., and Washington, D. C., fiftieth anniversay celebration, American Society of Mechanical Engineers.

April 7—Pittsburgh, Pa., meeting and election, Eastern district, Division of Production, American Petroleum Institute, William Penn Hotel.

April 5-13—Detroit, All American Aircraft Show.

April 7-11—Atlanta Ga., seventy-ninth meeting, American Chemical Society.

April 7-12 — Chicago, annual meeting, American Oil Burner Association, Stevens Hotel

April 8-9—St. Louis, Mo., meeting, Oil and Gas Well Supply Traffic Association, Hotel Jefferson.

April 10—Midland, Tex., spring meeting, American Petroleum Institute, Division of Production, Southwestern district, Sharbauer Hotel.

April 15-17 — Norman, Okla., Gas Measurement Short Course, University of Oklahoma College of Engineering.

April 17-18—Wichita, Kans., Kansas Oil Men's Association, Broadview Hotel.

April 23-24—Cleveland, Ohio, semiannual meeting, National Petroleum Association, Cleveland Hotel.

April 24 — Indianapolis, Ind., spring meeting, Indiana Petroleum Marketers Association, Severin Hotel.

May 5-8—New Orleans, La., convention, Natural Gas Department, American Gas Association, Roosevelt Hotel.

May 12-15—Atlantic City, N. J., annual meeting, National Fire Protection Association, Haddon Hall.

May 19-20—Tulsa, Okla., National Oil Scouts Association of America, Mayo Hotel.

May 20-22—Tulsa, Okla., annual meeting, Natural Gasoline Association of America, Mayo Hotel.

May 21-23—Los Angeles, Calif., National Foreign Trade Conference.

May 25-29 — French Lick Springs, Ind., summer meeting, Society of Automotive Engineers.

June 16-25 — Berlin, Germany, World Power Conference.

June 23-26 — San Francisco, Calif., convention, American Railway Association.

June 23-27—Atlantic City, N. J., annual meeting, American Society for Testing Materials.

## Late Fields

### GULF COAST

HOUSTON, Tex., Apr. 8.—The East Hackberry Field of Cameron Parish, Louisiana, was extended approximately 1,200 feet north and a shallower sand was opened for production there when Calcasieu Oil Co.'s No. 17 Watkins came in Tuesday flowing an estimated 1,600 bbls. of pipe line oil daily from sand at a total depth of 2,712 feet. This discovery may mark a revival of development on that dome, which has been comparatively inactive the past year following a series of disappointing developments although during the earlier part of 1929, following discovery of the field in November, 1928, it was one of the most active areas on the coast and was developed to the principal producer in southern Louisiana. Previous production has been at a depth of 3,600 feet.

Marrs McLean's No. 17 Cade, High Island, blew in from a sand at 3,766 feet and is flowing an estimated 1,200 bbls. daily. The well was out of control for nearly twelve hours but since has been successfully completed.

Union Sulphur Co.'s No. 757 fee, Sulphur Dome, Calcasieu Parish, Louisiana, came in flowing an estimated 2,500 bbls. daily from sand at approximately 4,100 feet.

### KANSAS

Barnsdall Oil Co.'s No. 1 N. McCarty, NW cor. NE, Section 31-25-17w, Edwards County, flowed 90 bbls. of oil in one flow, and later filled up 3,000 feet with oil in two hours. The oil was found in sand at 4,530-46 feet. The new well is on a 10,000-acre block and will be drilled deeper.

While the Shell Petroleum Corp.'s No. 1 Palmer in Section 36-22-2w, north of Halstead, in Harvey County, Kansas, was drilling out the bridge, the well flowed about 30 bbls. in six minutes into the slush pit. The casing has been cemented on top of the chat which was found at 2,970-3,002 feet. Tanks were erected and later the well made 166 bbls. in 12 hours.

The latest test to be completed in the Voshell Pool was the Mid-Kansas Oil & Gas Co.'s No. 4 Voshell, SW cor. NW NE, Section 9-21-5w. The well swabbed 1,150 bbls. the first 24 hours from the Simpson sand at 3,320-30 feet, and from the Silicious lime at 3,384-94 feet. The new well is located on the west side of the pool and is the most westerly test to produce oil in the pool.

On the gauge ending at 7 a. m., April 7, 27 wells in the Voshell Pool made 34,660 bbls. of oil. The other wells are yet to be tested for production. Some believe the pool may reach 40,000 bbls. a day. The big increase in production is due to the wells being deepened to the Silicious lime.

Curtailment in the Ritz Pool, in McPherson County, will be increased the first of May from the present 50 bbls. a day basis to 50 per cent of the potential. The production in this pool is found in the chat.

Mid-Kansas Oil & Gas Co.'s No. 1 Pitts, C SW SE, Section 2-19-2w, McPherson County, after being idle for 44 hours, flowed 55 bbls. of oil and swabbed 60 bbls. oil and 3 bbls. of water. The well was drilled deeper to a total depth of 3,977 feet and no increase in the oil was noticed.

### OKLAHOMA

The deepest test ever drilled in Oklahoma is still drilling in Harper County in the northwestern part of the State. It is the Sinclair Oil & Gas Co.'s No. 1 Howell, C SW SW, Section 14-26-24w, and it had reached a depth of 8,011 feet in lime, on April 7. The test is expected to be drilled to the Wilcox sand.

Payne Drilling Co.'s No. 1 Miller, SE cor. NE, Section 22-6-3, a wildcat in Pottawatomie County, flowed 210 bbls. in seven hours. The oil was encountered in the Cromwell sand at 3,495-3,525 feet. The test was drilled to the Wilcox sand and found water, then plugged back and the casing ripped from 3,505-10 feet. It is located several miles west of the Asher Pool.

Magnolia Petroleum Co.'s No. 2 Deck-

(Continued on Page 177)

# High Spots in Field News

### ROCKY MOUNTAIN AREA

**Drilling stimulated in Hobbs Pool by announcement of pipe lines.**

### CALIFORNIA

**Curtailment to be continued for another 30 days regardless of effect of gas conservation law.**

### NORTH TEXAS AND PANHANDLE

**Test in Collingsworth County bails 10 bbls. first oil well in county. Taack Pool may be extended.**

### SOUTHWEST TEXAS

**Bruner Field may be extended northeast. May be cross fault in Darst Creek following line of crevice spots.**

### NORTH LOUISIANA-ARKANSAS

**Well in Urbana district estimated 2,600-bbl. producer.**
**Two deep producers in Zwolle district.**

### WEST TEXAS

**Ward County has two wells extending field at opposite ends, O'Brien and Bennett Pools. Ten producing wells in Penn Pool, Ector County. Salt encountered higher north of pool.**

### KANSAS

**In Voshell Pool 27 wells made 34,660 bbls. and it is thought pool may reach 40,000 bbls.; increase largely from wells deepened to Silicious lime. Ritz Pool to be curtailed 50 per cent of potential May 1.**

### OKLAHOMA

**Pottawatomie County wildcat made 210 bbls. in seven hours; several miles west of Asher Pool. Lincoln County well flowed 284 bbls. first hour. Garfield County wildcat north of Marshall Pool, Logan County, filled up 2,500 feet with oil.**

### GULF COAST

**Deep well at Refugio increasing flow in fourth pay horizon.**
**East Hackberry Field extended 1,200 feet north and shallower sand opened. High Island well blew in flowing estimated 1,200 bbls. Sulphur Dome well flowing estimated 2,500 bbls.**

## GAS LINE FROM RYCADE TO DEL RIO PLANNED

SAN ANTONIO, Tex., Apr. 7.—Texas Gas Utilities Co. will lay a 10-inch gas line from the Rycade gas field in Maverick County to the power plant of the Central Power & Light Co. on Devil's River northwest of Del Rio in Val Verde County, a distance from field to plant of 62.6 miles. It will be A. O. Smith electric weld line. Survey for the line has been completed by Brokaw, Dixon, Garner & McKee, engineers of New York City and the pipe has been ordered and it is expected that construction work will be started in less than a month.

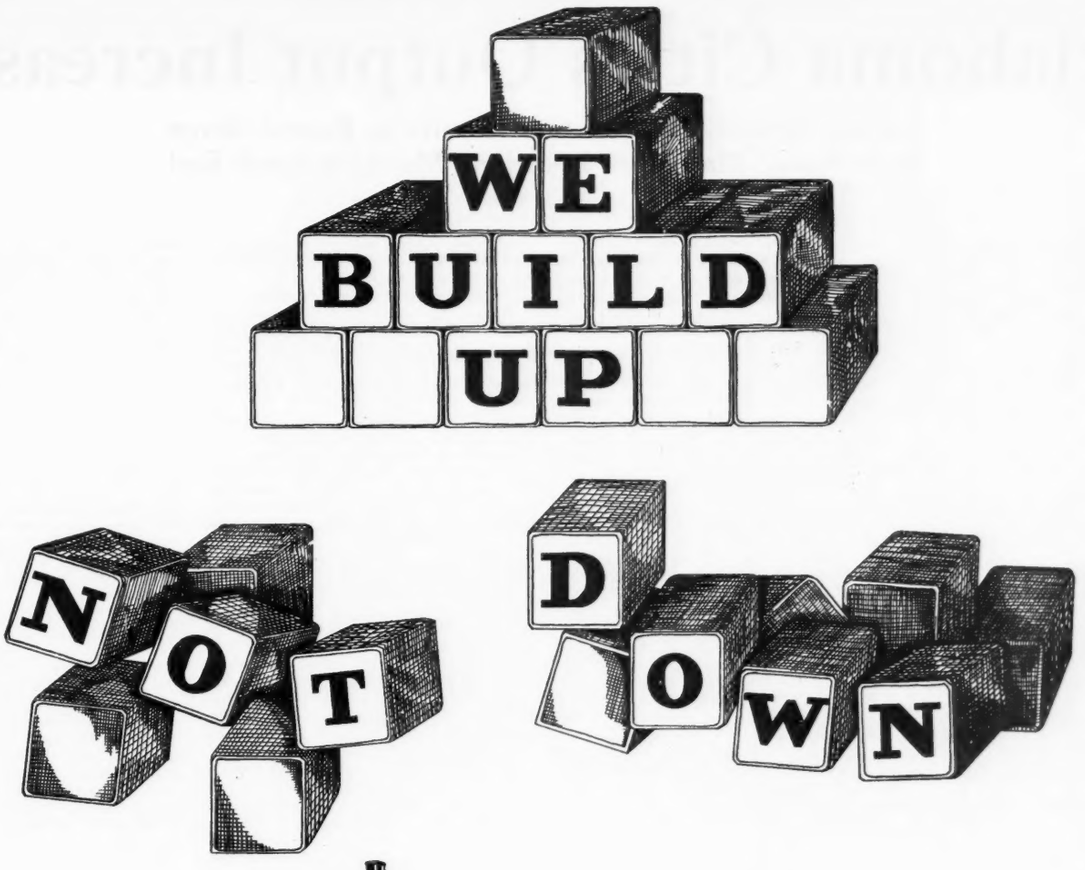
The system will ultimately be extended southwest to Eagle Pass and south to Carrizo Springs, Crystal City and other cities and will be extended also to Uvalde on the east and will supply Del Rio through the line to the power plant.

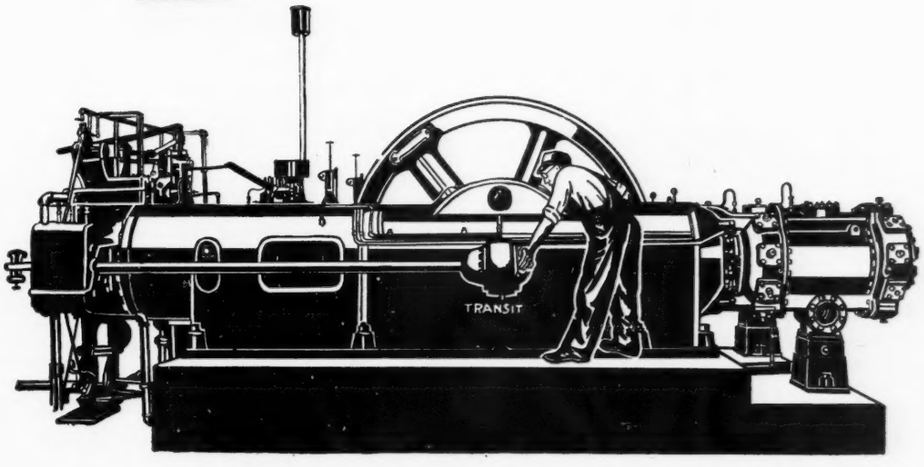
## A.P.I. WEEKLY REFINERY STATISTICS

The weekly report made to the American Petroleum Institute on refinery statistics—crude runs to stills, gasoline stocks and gas and fuel oil stocks—for the week ending April 5 follows:

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| East Coast | 100.0 | 3,297,400 | 9,341,000 | 6,348,000 |
| Appalachian | 91.0 | 619,800 | 1,870,000 | 697,000 |
| Indiana, Illinois, Kentucky | 99.5 | 2,154,100 | 8,601,000 | 3,036,000 |
| Oklahoma, Kansas, Missouri | 89.1 | 2,103,000 | 4,506,000 | 3,593,000 |
| Texas | 90.4 | 3,812,900 | 7,869,000 | 10,865,000 |
| Louisiana and Arkansas | 96 8 | 1,179,900 | 2,765,000 | 2,031,000 |
| Rocky Mountain | 93.6 | 442,000 | 3,072,000 | 1,069,000 |
| California | 99.3 | 3,816,100 | 15,784,000 | 108,690,000 |
| Total United States | 95.6 | 17,425,200 | 53,808,000 | 136,332,000 |
| Total last week | 95.6 | 17,435,500 | 54,739,000 | 136,186,000 |
| Texas Gulf Coast | 99.4 | 2,866,900 | 6,772,000 | 8,401,000 |
| Louisiana Gulf Coast | 100.0 | 723,700 | 2,412,000 | 1,225,000 |

(1) Per cent refinery capacity represented. (2) Crude runs to stills. (3) Gasoline stocks. (4) Gas and fuel oil stocks.

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St. Louis, Mo.

# Oklahoma City's Output Increased

## Larger Permitted Production Results in Record Seven Days' Runs. Many New Locations, Mostly in South End

By W. A. Spinney
*Staff Correspondent, Oklahoma Fields*

Increased permitted production in the Oklahoma City Pool has increased Oklahoma's total for the week ending April 5 to a daily average of 635,000 bbls. The Oklahoma City Pool had the highest daily average in its history for the same seven days, mostly due to the wild well in the pool which had been blowing open for about two weeks. The company has been picking up much of the oil and including it in the daily runs from the field. The daily average of the Oklahoma City Pool in the past week was 95,750 bbls. a day.

The Indian Territory Illuminating Oil Co.'s No. 1 M. Sudik, NE cor. SW, Section 36-11-3w, was shut in and brought under control Sunday, April 6, after three unsuccessful attempts which resulted in the well being shut in for seven or eight hours only. This well has blown open for 11 days since March 26. It delayed operations in the entire field. Recovery of oil from the well was estimated to be in excess of 200,000 bbls. The oil was being picked up from the Sudik and adjoining leases.

Another well which blew wild for about a week before the well on the Sudik farm blew in, is still shut in. This well is the Coline Oil Co.'s No. 7 Warren, NE cor. SW SW, Section 18-11-2w. Water was being pumped into the test to kill the gas pressure. Oil was being picked up around the lease and 2,275 bbls. has been recovered.

With the south end of the field shut down some of the companies were making new locations. Cellars were dug for four new operations. Sinclair Oil & Gas Co. made two locations on School Land No. 54, and two on School Land No. 67.

### Two New Wells

During the first part of the week two new wells were brought onto production. One of the wells extended production a location to the west. Mid-Kansas Oil & Gas Co.'s No. 2 Mollman, NW cor. SE SE, Section 23-11-3w, blew in without being bailed. The last string of casing was landed at 6,385 feet, and the total depth was 6,409 feet. The well was estimated to have 2,000 pounds rock pressure with about 10,000,000 feet of gas per day. The first hour's gauge was 287 bbls. of oil, the second hour, 229 bbls. and the third hour 229 bbls. The well made 2,492 bbls. in 12 hours, and was then shut in. The well was much larger than the operators expected and many express the opinion the balance of the lease may be found productive. The crew landed 6,385 feet of 9-inch casing, the longest string in the pool to date. On the east side of the pool some tests were shut down on account of the fire hazard caused by the uncontrolled Indian Territory Illuminating Oil Co.'s No. 1 M. Sudik. It was necessary to shut in the Shell Petroleum Corp.'s No. 3 Petty, NE cor., Section 30-11-2w, early last week after the test showed considerable oil and gas. It was expected the well may be conditioned in a few days.

Skelly Oil Co.'s No. 3 Hoopes, NE cor. NW NE, Section 31-11-2w, found it necessary to shut down after being open an hour and 15 minutes during which time it made 322 bbls. and 100,000,000 feet of gas. The gas pressure was so strong that it cut out the connections.

### An Important Test

An important test on the east side of the pool was expected to start bailing. It is Tom Slick Oil Co.'s No. 2 Hussman, SW cor., Section 29-11-2w, which has reached a total depth of 6,441 feet. If production is found it will extend the pool a half mile east and may result in a considerable number of new locations. The test is bottomed in lime with the last string of casing landed at 6,361 feet. Same operator's No. 1 Hussman, SW cor. NW SW, Section 29-11-2w, on the same lease, was bailed dry at a total depth of 6,454 feet, with nothing showing. The test found the Arbuckle lime at 6,265 feet. Standard tools are being rigged up and it will be drilled deeper.

Another completion was being delayed in the south end of the pool by the wild producer. Tom Slick Oil Co. and Anderson-Prichard Oil Corp.'s No. 4 M. Hoopes, NE cor. SW NE, Section 31-11-2w, a quarter mile north and east of the wild producer, was shut down at a total depth of 6,571 feet.

Mid-Kansas Oil & Gas Co.'s No. 2 Fortson, C NW NE, Section 24-11-3w, one of the old producers in the Oklahoma City Pool, was flowing nothing but salt water and was estimated to be making around 8,000 bbls. a day.

### New Proration Plan

With the increased proration in the Oklahoma City Pool, the area is now permitted to produce 16⅔ per cent of the potential. The new plan went into effect April 3 and was an increase from the old curtailment of 12½ per cent.

Opening dates of the well classes are given as follows:

Class A open April 3 to 5; April 15 to 17; April 27 to 29.

Class B open April 4 to 6; April 16 to 18; April 28 to 30.

Class C open April 6 to 8; April 19 to 21; April 30 to May 2.

Class D open April 7 to 9; April 19 to 21; May 1 to 3.

Class E open April 9 to 11; April 21 to 23; May 3 to 5.

Class F open April 10 to 12; April 22 to 24; May 4 to 6.

Class G open April 12 to 14; April 24 to 26; May 6 to 8.

Class H open April 13 to 15; April 25 to 27; May 7 to 9.

A number of wells have been given new classifications because of addition of new wells and for better distribution of oil to the pipe lines.

### 25 Scattered New Locations

During the early part last week 25 new locations were made in the Oklahoma City area. These locations were scattered. Twelve of the locations were made by the Indian Territory Illuminating Oil Co., Sinclair Oil & Gas Co. made 11 new locations, and Cromwell-Franklin Oil Co. announced two. The locations in the south end of the pool were made after the Sinclair Oil & Gas Co. completed No. 1 School Land No. 67, the first test to produce from the Wilcox sand in the Oklahoma City Pool and which extended the field a half mile to the west. The Sinclair Oil & Gas Co.'s new locations were as follows: No. 1 School Land No. 69, NE cor. SW, Section 36-11-3w, which will be a west offset to a test drilled several years ago by L. E. Trout and others in the NW cor. SE, Section 36-11-3w, and abandoned as dry at a total depth of 4,479 feet. Other locations were on the Vincl farm in Section 31-11-2w, and on the School Land No. 54 and School Land No. 67, both in Section 36-11-3w. Cromwell-Franklin Oil Co. staked two on the Trosper Park property in Section 12-11-3w. Indian Territory Illuminating Oil Co.'s locations were on the Oklahoma State Land in Section 36-11-3w, M. Sudik in Section 31-11-2w, Jones in Section 31-11-2w, C. Trosper in Section 14-11-3w, and H. G. Trosper in Section 14-11-3w, on the west side of the Oklahoma City Pool.

### Biggest Well Runs to Water

The largest well on actual gauge ever completed in Oklahoma was the Indian Territory Illuminating Oil Co.'s No. 1 Thomas Fuzzell, SW cor. SE SE, Section 13-11-3w, which was completed for 44,222 bbls. the first 24 hours, the production of which was turned into the tanks about six months ago. The well was opened for its regular prorated production April 1 and made 129 bbls. of oil and 4,128 bbls. of water in 19½ hours. The next day the well was making all water and gauged 3,900 bbls. of water and no oil. The oil was found in the Arbuckle lime at 6,125 feet and the total depth was 6,542 feet.

Another well completed in August, 1929, that is now making mostly all water is the Indian Territory Illuminating Oil Co.'s No. 1 K. Henning, NE cor. SW SE, Section 24-11-3w, which started at 5,600 bbls. the first 24 hours. The gauge of the well on April 4 was 453 bbls. of oil and 5,822 bbls. of water.

Indian Territory Illuminating Oil Co.'s No. 1 Precure, SE cor., Section 11-11-3w, was blowing wild Monday, April 7. The test encountered what is estimated to be 75,000,000 feet of gas, at a total depth of 6,010 feet. The well blew in unexpectedly with all the drill pipe still in the hole.

Indian Territory Illuminating Oil Co.'s No. 3 L. Farley, NE cor. NW, Section 19-11-2w, blew in after bailing down about 1,500 feet. The well was producing from the Silicious lime at a total depth of 6,535 feet. After the oil turned into the tanks the first hour's gauge was 120 bbls., the second hour was 160 bbls. The next gauge taken was for an hour and 20 minutes during which 196 bbls. was produced, and the fourth hour's gauge was 138 bbls. The gas volume was estimated to be 50,000,000 feet. It made 922 bbls. in six hours and 10 minutes, cutting 5 per cent.

The Coline Oil Co.'s No. 9 Olds, SW cor. NW, Section 24-11-3w, has not shown very favorably thus far. The fluid started to flow over the crown block after bailing and it was necessary to close the master gate until the wind was in the right direction. The well was opened a day later and after a short time spent in cleaning out, it made 84 bbls. the first hour and 68 bbls. the second hour. On account of the relatively small flow the operators believed the well had bridged and several attempts were made to loosen the supposed bridge by letting the well gather a head. These attempts failed to bring better results. The well may be reconditioned later. It was producing from the Arbuckle lime at a total depth of 6,500 feet.

On the west side of the pool the Indian Territory Illuminating Oil Co.'s No. 3 Unsell-Krager, SE cor. NE NE, Section 23-11-3w, was bailed down, Sunday, April 6, and the first hour's gauge was 252 bbls. The gas volume was estimated at 5,000,000 feet. The second hour's gauge was 322 bbls., and the well made 493 bbls. the next hour and 20 minutes. The well was averaging about 320 bbls. an hour. The oil was encountered in the Simpson at 6,398-6,451 feet.

Same operators were bailing in another test, No. 1 M. Warden, NW cor. SW, Section 24-11-3w, but the gas pressure was low and while oil blew into the air for a short period from a total depth of 6,575 feet, it was not considered a completion. The operators plan to recondition the well before a production test is made.

### May Extend Into Cleveland

The Oklahoma City Pool is now expected to cross over into Cleveland County, with the first location made during the week. Continental Oil Co.'s No. 1, in the N half NW NE, Section 6-10-2w, Cleveland County.

The wildcat test of Tom Slick Oil Co. and Tidal Oil Co. in the eastern part of Oklahoma County, was running casing again. The test is No. 1 Martin, NW cor., Section 13-13-1w, near Jones, the total depth was 6,971 feet.

Continental Oil Co.'s No. 1 Brown, C SE NW SW, Section 10-20-4w, south-

(Continued on Page 154)

## WILDCAT OPERATIONS IN OKLAHOMA

(Descriptions are East and North unless marked otherwise)

**NORTHERN OKLAHOMA**

**ALFALFA COUNTY**

| Company, farm and location— | Remarks: |
|---|---|
| Smith Brothers' No. 1 Forbes, SE cor. NW NW Sec. 12-27-11w | Shut down 1,232 ft. |
| J. W. Bailey's No. 1 Acre, SW cor. NE Sec. 14-24-11w | Rigging up standard tools 4,660 ft.; cleaning out. |

**BECKHAM COUNTY**

| | |
|---|---|
| Ray Johnson and J. R. Cuniff's No. 1 Brower, C NW Sec. 29-10-22w | Rig. |
| Kay et al's No. 1 Martin, C E half E half NW Sec. 32-8-24w | T. D. 3,335 ft.; P. B. 1,990 ft.; shot 25 qts.; water; abandoned. |
| Producers Exploration Co.'s No. 1 Seidell, SE cor. SW SW Sec. 17-9-22w | Shut down 2,402 ft. |
| Carson et al's No. 1 Danby, SW cor. SE NE Sec. 29-8-22w | Shut down 1,575 ft. |

**BLAINE COUNTY**

| | |
|---|---|
| Lowen et al's No. 1 Unknown, NW cor. SW NW Sec. 17-16-11w | Spudded and shut down. |
| Washoma Oil Co. et al's No. 1 Phillips, C NW SW Sec. 12-19-10w | Shut down 2,935 ft. |

**CADDO COUNTY**

| | |
|---|---|
| Abernathy & Brown's No. 1 Horton, SE cor. Sec. 8-6-13w | Shut down 596 ft. |
| W. J. Hartley's No. 1 Galbreath, SE cor. NW SE Sec. 29-5-12w | Shut down 3,394 ft. |

**CLEVELAND COUNTY**

| | |
|---|---|
| Harris et al's No. 1 Highbee, SE NW Sec. 20-6-1 | Drlg. 5,000 ft. |
| Daniels & LeWright's No. 1 Vandever, C SW Sec. 15-7-1w | Shut down 3,130 ft. |
| Phillips Petroleum and T. B. Slick's No. 1 Sudick; NE cor. NE Sec. 8-10-2w | Wilcox 7,716-20 ft.; water; plugging back. |

**COAL COUNTY**

| | |
|---|---|
| W. E. McGraw's No. 1 King, C SW NE Sec. 11-1-8e | Drlg. 2,285 ft. |

**COMANCHE COUNTY**

| | |
|---|---|
| V. Wright's No. 1 Indian Land, SE SW Sec. 29-2-9w | Drlg. 750 ft. |
| Pelwine Oil's No. 1 Howe, C SE SW Sec. 33-1-9w | Drlg. 2,250 ft. |
| G. W. Stogner's No. 1 Doebel, C SW SW Sec. 3-3-9w | Drlg. 1,450 ft. |
| Green et al's No. 1 Wilson, C NE SW Sec. 14-1-12w | Shut down 4,055 ft. |

**GARFIELD COUNTY**

| | |
|---|---|
| Shell Petroleum Corp.'s No. 1 Loomis, C NW NW Sec. 32-23-4w | Drlg. 4,487 ft. |

(Continued on Page 204)

# *Security*

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# Voshell Is Kansas' Leading Pool

## Deeper Pay Puts Potential at 25,000 Bbls. Will Be Curtailed and Prorated. State Production Increases

By W. A. Spinney
*Staff Correspondent, Kansas Fields*

Kansas production was sharply increased for the week ending April 5, when the daily average stated production for the previous seven days was 117,000 bbls. It is a daily increase of 3,000 bbls.

Shell Petroleum Corp.'s No. 1 Palmer, C SW NW, Section 36-22-2w, Harvey County, was gushing over the top of the derrick Saturday afternoon, and it appeared to be the largest well yet completed in Harvey County. It is a wildcat about 18 miles south of the Ritz Pool, and 5 miles north of Halstead. When the chat was penetrated from 2,970 to 3,002 feet the well flowed 25 bbls. in three minutes and then bridged. The next day it made three small flows into the slush pit. The crew was rigging up to knock out the bridge and drill it a few feet deeper. The well is estimated from 500 to 1,500 bbls. when completed. It is located on a core drilled block and extends production 2 miles north of the gas area. Several tests were drilled to the south, one on the Haury land, which produced gas with a showing of oil.

The potential output of the Voshell Pool in McPherson County, suddenly and unexpectedly increased to an estimated 25,000 bbls. a day, due to the deepening of the old producers from the Simpson sand to the Silicious lime. The operators' committee on April 1 decided to place the pool and the area on a proration basis. New potential gauges were to be taken this week and production is to be limited to 15,000 bbls. a day. This amount of oil was agreed upon at a recent meeting of Voshell Pool operators last month. Later production began to drop and it appeared that there would be no further need of prorating production. The deepening of the wells followed and the discovery of the deeper pay increased the pool's output to an estimated 25,000 bbls. from 31 completed wells.

The Voshell Pool has become the State's largest producing area. Production increased in the pool from 14,000 bbls. a day to 21,441 bbls. on the gauge of April 2, with six wells off production. The only pipe lines serving the pool are the Derby Oil Co.'s 4-inch with a capacity of 5,000 bbls. a day; Prairie Pipe Line Co. and the Shell Pipe Line Co. each of which has a 5,000-bbl. capacity, which gives the pool a total of 15,000 bbls. a day of pipe line outlet. Voshell displaces Valley Center in Sedgwick County as the State's largest producing pool.

### Voshell Pool Production

The production from the Voshell Pool in McPherson County was taken April 4 and was 23,880 bbls. from 31 wells. It is to be used as the new potential gauge. The gauges by wells were as follows:

| Company, well— | S.T.R. | Hours | Bbls. |
|---|---|---|---|
| Marland, No. 1 .... | 3-21-3w | 24 | 950 |
| Gypsy, No. 1..... | 3-21-3w | 24 | 742 |
| Barnsdall, No. 1 .. | 4-21-3w | 24 | 2,050 |
| Barnsdall, No. 2 .. | 4-21-3w | .. | off |
| Gypsy, No. 1 ..... | 4-21-3w | 24 | 55 |
| McBride, No. 2 .... | 9-21-3w | 21 | 1,487 |
| McBride, No. 3 .... | 9-21-3w | 24 | 975 |
| Mid-Kansas, No. 1.. | 9-21-3w | 4 | 230 |
| Mid-Kansas, No. 3.. | 9-21-3w | 24 | 880 |
| Empire, No. 1 ..... | 9-21-3w | 9 | 335 |
| Empire, No. 2 ..... | 9-21-3w | .. | off |
| Empire, No. 3 ..... | 9-21-3w | 24 | 1,362 |
| I. T. I. O., No. 1 .. | 9-21-3w | 24 | 1,003 |
| I. T. I. O., No. 2 .. | 9-21-3w | 24 | 246 |
| Derby, Nos. 1 and 8 | 9-21-3w | 21 | 2,518 |
| Derby, No. 2 ..... | 9-21-3w | .. | off |
| Derby, No. 6 ..... | 9-21-3w | 21 | 1,190 |
| Derby, No. 7 ..... | 9-21-3w | 21 | 1,558 |
| Shell, No. 1 ..... | 9-21-3w | 20 | 1,560 |
| Shell, No. 2 ..... | 9-21-3w | 14 | 1,070 |
| Shell, No. 3 ..... | 9-21-3w | 22 | 1,650 |
| Shell, No. 4 ..... | 9-21-3w | 21 | 1,527 |
| Sinclair, No. 1 .... | 10-21-3w | .. | off |
| Sinclair, No. 2 .... | 10-21-3w | 20 | 1,122 |
| Sinclair, No. 3 .... | 10-21-3w | .. | off |
| Sinclair, No. 4 .... | 10-21-3w | 18 | 370 |
| Prairie, No. 1 ..... | 10-21-3w | .. | off |
| Prairie, No. 2 ..... | 10-21-3w | .. | off |
| Texas, No. 1 ..... | 10-21-3w | .. | off |
| Shell, No. 1 ..... | 16-21-3w | 23 | 1,000 |
| Total ..... | | | 23,880 |

### Test Looks Discouraging

McPherson Oil & Gas Co. has a failure in its test southwest of the Ritz Pool in McPherson County. The test is No. 1 Riduger, in Section 26-20-2w, where a showing of oil was encountered in the top of the chat at 2,995 feet. The water in the test came in at 3,000 feet, and the test will probably be abandoned at that depth.

The possibility of a new producing area, the fourth in McPherson County, was bright when the Mid-Kansas Oil & Gas Co.'s No. 1 Pitts, in Section 2-19-2w, a wildcat, 6 miles north of the Ritz Pool, made 120 bbls. in 20 hours from chat at a total depth of 2,972 feet. The well also had a gas volume of 2,000,000 feet. The test will probably be drilled deeper into the chat. The top of the chat was found at 2,924 feet, where the well started making gas. The oil was found at 2,964 feet.

In the northeast part of McPherson County, near Roxbury, Continental Oil Co., Galt Brown Co. and others' No. 1 Zeitlow, in C NE SE SE, Section 7-17-1w, was expecting to reach the chat horizon in a few days. The test is a half mile northwest of the test drilled on the Fross lease by the Continental Oil Co. and others a few years ago, where a showing of oil was found which some estimate would have made 100 bbls. in the chat.

Darby Petroleum Corp. has a showing of oil in its semiwildcat test in No. 1 McPherson College, NW cor. SE SW, Section 13-20-2w, McPherson County, south of the Ritz Pool. The showing was encountered at 3,401 feet, and the crew was lowering the casing to 3,400 feet, and preparing to make a production test.

### Developments in Sumner County

The wildcat test of Slick, Pryor & Lockhart and others' No. 1 Peasel, in Section 33-31-1w, 5 miles northwest of Wellington, in Sumner County, which found oil in the chat and made around 75 bbls. a day, pinched, was later drilled to the Simpson sand at 4,070-85 feet, where a small increase in oil was noticed. It was impossible to ascertain the extent of the showing of oil in the Simpson sand as the oil from the chat horizon was carried in the hole while the test was drilling deeper. The crew was straightreaming the casing to a total depth of 4,059 feet, where it will be landed on a lime shell. It will be several days before the showing can be tested. Another test in the southern part of the county, near Geuda Springs, the Derby Oil Co.'s No. 1 Norris, NW cor., Section 35-24-2, made 8,000,000 feet of gas at 2,769-83 feet.

The production of oil from the Oxford district in Sumner County, which consists of five pools, totaled 9,488 bbls., averaged as follows for the week ending April 4: Oxford Pool, 2,843 bbls.; Churchill, 4,342 bbls.; Rainbow Bend Pool, 1,696 bbls.; Slick-Garson Pool, 485 bbls., and Miller Pool, 112 bbls.

The wildcat test 3 miles north of Halstead, in Harvey County, being drilled by Mrs. Margaret L. Gay, was nearing the Viola lime with encouraging prospects. The well is in C NW NE NW, Section 29-23-1w, and was underreaming casing to 3,360 feet. The test had a showing of oil and gas at 3,360-70 feet.

### Sedgwick County Operations

The Continental Oil Co. and Gypsy Oil Co. completed the one hundred fourteenth well in the Valley Center Pool during the week when No. 8 Reed, NW cor. SW SE. Section 1-26-1w, Sedgwick County, swabbed 721 bbls. in the first 20 hours from the Simpson sand at 3,363-67 feet. The Mars Oil Co.'s No. 2 Miller, NE cor. SE SW, Section 2-26-2, Sedgwick County, east of Greenwich townsite, in the north Lygrisse Pool, failed to find oil in the chat and will be deepened to the Viola and Simpson sands. The test is a location north of No. 1 Miller on the same lease which made around 40 bbls. a day from the chat. The tests are a mile northeast of the extension in that area.

In the Curry Pool, west of Wichita, in Sedgwick County, the Shell Petroleum Corp.'s No. 1 Southwestern College, C SW SW, Section 2-27-1w, encountered a showing of oil and a hole full of water in the Simpson sand at 3,459-61 feet. The casing will be lowered to shut off the water and drilling resumed. The test has had several showings of oil at shallower depths with considerable water. The Shell Petroleum Corp. has a large block of leases in the area and is making a thorough test of all the horizons.

Northeast of the Lygrisse Pool, in the Greenwich area, in Sedgwick County, a semiwildcat test of the Shell Petroleum Corp., its No. 1 Stollei, NW cor. NE SW, Section 11-26-2, pumped 222 bbls. of oil and 49 bbls. of water the first 24 hours. The oil found in this extension well was encountered in the Viola lime at a total depth of 3,168 feet.

Production in the Greenwich townsite is extended to the southwest by a new well. Graham Brothers' No. 1 Rapp, CNL NW NW, Section 22-26-2, found oil in the chat at 2,939-45 feet, and it appears to be good for 100 bbls. a day. The oil rose in the hole 400 feet. Tanks are being erected on the lease preparatory to making a production test. The well will be put to pumping without swabbing. It appears to have less water than other wells usually find on the townsite.

### Failure in Dickinson County

Hilligoss & Steinbuchel and others' No. 1 Diche, NW cor. NE NE, Section 17-13-4, Dickinson County, a wildcat near Chapman, is a failure in the Wilcox sand and is being abandoned. The Wilcox sand was found at 2,877-99 feet where the casing is being pulled.

Prairie Oil & Gas Co.'s No. 1 Davidson, NW cor. SE, Section 4-16-11w, Barton County, swabbed 135 bbls. of oil and 18 bbls. of water on the gauge of April 2. The test is being plugged back to a total depth of 3,339 feet, and will be pinched to 50 bbls. a day.

### Ochs Pool's Second Well

The second well to be completed in the new Ochs Pool, in southern Russell County, was the Empire Oil & Refining Co.'s No. 1 Krug, SW cor. NW NW, Section 24-15-14w, Russell County. The well swabbed 234 bbls. the first 24 hours from the Oswald formation at 3,354-70 feet. It offsets the discovery well to the east, which is pumping 145 bbls. a day.

Another location was announced during the week for a test in Russell County. The Imo Oil Co. is digging cellar for No. 1 Speere, in the NW cor. SE NE, Section 7-14-14w. The location is 8 miles from the Gorham Pool, in the same county, which is the nearest production.

A new well was added to the Aladdin Pool in the western part of Butler County. Aladdin Petroleum Co.'s No. 1 V. Bausinger, SW cor. NW SE, Section 24-27-3, is estimated to be an 80-bbl. well when completed. The oil was found in the Simpson sand at 2,985-3,010 feet.

### More Gas in Edwards County

Dixie Oil Co. and Amerada Petroleum Corp.'s No. 1 McCarty, SW cor., Section 22-25-17w, Edwards County, in southwestern Kansas, was making 15,000,000 feet of gas from 4,450-62 feet. It is being drilled deeper. It is hoped to find oil in the lower levels. In the discovery well drilled by the British-American Oil Co. 2 miles southwest, oil was found below a gas showing. The gas showing in the Dixie Oil Co. and Amerada Petroleum Corp.'s well indicates the gas area in Edwards County has huge potentialities.

### Butler County

Liggett and others' No. 1 Gunther, SE cor. NE NW, Section 29-26-7, has spudded and shut down. Ramsey and others' No. 1 Wilkinson, SE cor. NW, Section 25-24-3, is dry and abandoned at 2,768 feet. Empire Oil & Refining Co.'s No.

(Continued on Page 156)

## WILDCAT OPERATIONS IN KANSAS

(Descriptions are East unless otherwise marked)

**BARBER COUNTY**

Company, farm and location— Remarks:

Skelly Oil Co.'s No. 1 Temple Ranch, SW NE Sec. 13-34-15w ..... Casing trouble 5,241-46 ft.
Robertson et al's No. 1 Powell, SE cor. SE Sec. 11-32-10w ..... Fishing 4,023 ft.

**BARTON COUNTY**

Prairie's No. 1 Davidson, NW SE Sec. 4-16-11w ..... Shut down 3,335 ft.

**BUTLER COUNTY**

Joe Liggett's No. 1 Guanther, C SE NE NW Sec. 29-26-7.. Shut down 50 ft.
Martin et al's No. 1 Flanigan, C SW SE SW Sec. 29-27-3.. Drlg. 2,820 ft.

**CHASE COUNTY**

Transcontinental & Cheney's No. 1 Wassel, NE SE Sec. 36-20-9 ..... Drlg. 1,500 ft.
Urschell et al's No. 1 Lippa, C SW SW Sec. 27-18-6 .... Drlg. 1,810 ft.
Steinbuckel et al's No. 1 Stephenson, NE SW Sec. 4-20-6 ..... Fishing 1,435 ft.
Steinbuckel et al's No. 1 Cook, SE cor. Sec. 21-19-8 .... Fishing 1,940 ft.
E. W. Marland, Inc.'s No. 1 Altemus, SE NE Sec. 33-18-6 ..... Drlg. 2,950 ft.

**CHAUTAUQUA COUNTY**

Valentine Oil Co.'s No. 1 Patterson, NW SE SW Sec. 2-33-9 ..... Drlg. 1,600 ft.

**CLAY COUNTY**

Chrisler et al's No. 1 Tivier, SW cor. Sec. 19-8-3 ..... Shut down 50 ft.

**COWLEY COUNTY**

Roth & Farrout's No. 1 Adams, C SW NE NE Sec. 19-32-8 ..... Drlg. 250 ft.
Prairie O. & G. Co.'s No. 1 Dosbaugh, SE cor. Lot 27, Sec. 18-32-8 ..... Drlg. 2,090 ft.
Milton & Mead's No. 1 Tatum, SE cor. SW Sec. 11-31-6.. Shut down 3,100 ft.

**DICKINSON COUNTY**

Emery-Curtis & Bryan's No. 1 Hevner, NW SE Sec. 31-13-3 ..... Drlg. 1,500 ft.
Cross' No. 1 Sanden, NE cor. Sec. 12-15-2 ..... Rig.
Prairie's No. 1 Rumold, C NW SW NE Sec. 12-16-2 .... T. D. 3,205 ft.; abandoned.
Hiatt & Durham's No. 1 Wendt, NW cor. Sec. 17-16-2 .. Spudding.
Kruger et al's No. 1 Diche, C NW NE NE Sec. 17-13-4 ..... Drlg. 2,730 ft.
E. N. Morgan's No. 1 Whithair, NW SE Sec. 9-12-1 .... Shut down 1,768 ft.

(Continued on Page 203)

# 2,600-Bbl. Well in Urbana District

## Well 15 Miles Southeast of El Dorado, Ark. Gas Well in Mississippi Caused Wild Reports of Gusher Oil Well

By D. H. Bancroft
*Staff Correspondent, Louisiana-Arkansas*

SHREVEPORT, La., Apr. 7.—Reports of a 20,000-bbl. well in the Urbana district of Union County, Arkansas, 15 miles southeast of El Dorado, had Shreveport and El Dorado considerably excited for a short while during the latter part of the past week until later reports confirming the completion showed that it made 1,225 bbls. in 14 hours through a 1-inch choke before salt water showed up. It was still flowing at that rate Friday morning but the production was about 66 per cent water. Similar reports were received early in the week concerning Gulf Refining Co.'s well at Jackson, Miss., and were likewise found on investigation to be highly exaggerated.

The Arkansas well was Marine Oil Co.'s No. 2-B Winn, in Section 10-18-13. It had sand from 3,528-31 feet, total depth 3,534 feet. For the first 10 minutes it flowed 120 bbls. of 18.7 gravity oil through a 1-inch choke and then was pinched in to seven-sixteenths inch. At the rate it was flowing it was a 2,112-bbl. well but the water breaking in has cut it to 718 bbls. net oil. At the end of the first full 24-hour run, however, there was a marked improvement in the well's performance. At that time it was flowing 220 bbls. an hour or 5,280 bbls. a day and the water content had decreased to 50 per cent or a net oil production at this rate of 2,640 bbls., a much better well than the same company's No. 3-A Thompson, in the same section, which flowed 465 bbls. initial when completed last January as Arkansas' deepest producer.

### Facts on Mississippi Well

Gulf Refining Co. cemented 9-inch at 2,500 feet on No. 1 Rainey, Section 13-5-1e, Rankin County, Mississippi, with chalk from 2,501-20 feet and it started heading while bailing to test, finally coming in with an estimated 5,000,000 to 7,000,000 feet of gas and 1,500 to 2,000 bbls. of water. Occasionally there is a little black, heavy oil, probably 5 bbls. altogether, so far. It is shut in at present while blow boxes are being built. Jackson Oil & Gas Co.'s No. 1 Mays, Section 2-5-1e, completed February 16, is flowing through separator, making sufficient gas to fire the boiler of a rig drilling about half a mile north. Another report during the week was that McDonald & Shaw, drilling No. 1 Black in Section 12-13-28, Little River County, Arkansas, had found a substantial showing but this also was found to be exaggerated. The operators claimed a show at 1,965 feet but tested salt water at 2,106 feet and were coring at 2,060 feet.

### Slight Decline in Production

Slight variations in most of the producing areas of both states contributed to a net decline of 435 bbls. in daily average runs from the field for the week, a decline that would have been greater except for an increase of 840 bbls. in Zwolle and 90 bbls. from Pleasant Hill. Total runs averaged 101,470 bbls., compared to 101,905 bbls. the week before. Louisiana runs of 43,710 bbls. were an increase of 385 bbls., but this was eclipsed by a decline of 820 bbls. from the Arkansas fields whose total runs averaged 57,760 bbls. Daily average runs from the several pools were.

**NORTH LOUISIANA**

| Pool— | Bbls. |
|---|---|
| Caddo, light | 9,980 |
| Caddo, heavy | 2,620 |
| Homer | 3,600 |
| Haynesville | 4,585 |
| DeSoto-Red River | 3,145 |
| Elm Grove | 460 |
| Bellevue | 650 |
| Cotton Valley | 2,315 |
| Urania | 5,305 |
| Pleasant Hill | 825 |
| Sarepta-Carterville | 4,240 |
| Zwolle | 4,685 |
| Holly | 1,300 |
| Total | 43,710 |
| Last week | 43,325 |
| Increase | 385 |

**ARKANSAS**

| | |
|---|---|
| El Dorado | 3,970 |
| Smackover, light | 5,230 |
| Smackover, heavy | 40,535 |
| Stephens | 965 |
| Nevada County | 1,000 |
| Lisbon | 1,015 |
| Champagnolle | 4,820 |
| Mount Holly | 140 |
| Bradley | 85 |
| Total | 57,760 |
| Last week | 58,580 |
| Decline | 820 |
| Both states | 101,470 |
| Last week | 101,905 |
| Decline | 435 |

Zwolle and Carterville remained the most interesting spots in the Shreveport division with two completions in the latter and three in Zwolle. One of Carterville's completions was a dry hole, Kinnebrew and others' No. 1 Garrett, in Section 36-23-12, abandoned at 3,180 feet. Tippett Drilling Co.'s No. 1 Holmes, in the same section, flowed an initial of 190 bbls. from sand at 3,159-64 feet, total depth 2,175 feet. R. L. Crook's No. 12 Larkin, section 14-19-11, Bellevue district, pumped 17 bbls., 30 per cent water, from 405 feet. One of Zwolle's completions was a salt water hole also. G. A. Henshaw's No. 2-A Sabine, in Section 31-8-12, at 2,651 feet. Lide and others' No. 2 Sabine, in the same section, pumped 30 bbls. from 2,224 feet, finding a productive break in the chalk higher than in any other well in the field. Olsan Brothers' No. 1 Leone, in Section 32-8-12, pumped 80 bbls. from 2,575 feet. Hatcher and others abandoned location for No. 1 Moore in Section 32-10-12, Pleasant Hill district, Sabine parish, and Magnolia Petroleum Co. completed No. 2 McLeroy, in Section 33-10-12, flowing 30 bbls. through tubing from 3,279 feet. G. M. Legrand's No. 1 Haley, a wildcat in Section 6-7-12, about 6 miles south of Zwolle production, was abandoned on account of water at 2,576 feet. Bridges-Clark Oil Co. completed No. 1 Gay, Section 3-9-12, a wildcat southeast of Pleasant Hill production, as a 12,750,000-foot gasser with a rock pressure of 1,275 pounds, total depth 3,276 feet.

Loring Oil Co.'s No. 1 Sabine, in Section 34-8-12, came in from 2,352 feet flowing at the rate of 1,200 bbls., but went dead after four hours, and probably will be standardized. There were several new locations in the Zwolle-Blue Lake district, most interesting of which were a couple of wildcats between the two producing areas which will go to prove or disprove a theory that the two will eventually be linked into one big pool 12 miles long. Up to date the northern and southern limits of production have not been very well defined. One of these two wildcats is Longoria and others' No. 1 Belton, in the SE NE, Section 31-9-13, and the other is Ohio Oil Co.'s No. 1, Account 2, Bowman-Hicks, in Section 6-7-13.

Bahan & Bahan and Air Lift Oil Co.'s No. 1 May, in Section 26-23-11, Bossier Parish, is proving an interesting Carterville test in that it looks like a producer at 2,965 feet, several feet above the pay from which the area originally produced as a gas field. It drilled to 3,180 feet, missing the new oil pay and the older gas altogether and plugged back, drilling out to 2,965 feet whence fluid 50 per cent water, rose 2,200 feet in the hole, and is setting tubing. A number of other Carterville wells have missed the 3,100-3,200-foot pay and are drilling well below it. The Delaware-Louisiana Development Co.'s No. 6 Bollinger, Section 31-23-11, at 3,207 feet; H. L. Hunt's No. 1 Allen, Section 30-23-11, at 3,337 feet; Louisiana Petroleum Corp.'s No. 3 Bain, Section 32-23-11, at 3,250 feet; Magnolia Petroleum Co.'s No. 1 Dodson, Section 16-23-12, at 3,338 feet, and No. 1 Roberson, Section 26-23-12, at 3,241 feet, after testing one joint of oil at 3,189 feet; Phillips Petroleum Co.'s No. 2 Bolin, Section 30-23-11, waiting for standard rigs, with 300 feet of oil in the hole from 3,247 feet, and The Texas Company's No. 4 Peyton, Section 30-23-11, standing 300 feet in oil from 3,200 feet. Lide and others' No. 1 Farrington, in Section 23-23-12, tested salt water with a show of oil at 3,152 feet, but may not yet be in the Carterville sand as water has not been found at this level elsewhere in the field.

### Two Deep Producers

Loring Oil Co. is getting two producers at extreme depths in Zwolle. No. 2 Bowman-Hicks, in Section 3-7-12, is bailing about 75 bbls. daily from 2,725 feet, and No. 3 Bowman-Hicks is bailing the same amount from 2,363 feet. Their No. 5 Bowman-Hicks, in Section 34-8-12, will be an interesting test closely watched as they have shut down at 2,675 feet to move in a heavier rig for a deep test to 3,000 or 4,000 feet, possibly deeper. Sabine Oil & Gas Co.'s No. 1 Anderson, in Section 19-8-12, a wildcat north of Zwolle production, is waiting orders after swabbing at 2,613 feet, produced a little oil.

Shreveport Oil Corp.'s No. 4 Hicks, Section 32-21-15, Pine Island district of Caddo Parish, was a 125-bbl. producer flowing from 2,117 feet, and Triangle

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## LOUISIANA-ARKANSAS PROVEN AREAS

**NORTH LOUISIANA**
**BOSSIER PARISH—CARTERVILLE**

| Company, farm and location— | Remarks— |
|---|---|
| Ark. Fuel Oil Co.'s No. 2 Barnett, 290 ft. S, 300 ft. E. NW cor. NW NE, Sec. 36-23-12 | Derrick. |
| Ark. Fuel Oil Co.'s No. 2 Bollinger, 330 ft. S, 330 ft. W, NE cor. SW SW, Sec. 25-23-11 | Drlg. gumbo 3,127 ft. |
| Ark. Fuel Oil Co.'s No. 3 Bollinger, 1,024 ft. S, 375 ft. W, NE cor. Lot 26, Sec. 38-23-12 | Began drlg. Mar. 31; cmtd. 10-in. 200 ft. |
| Ark. Fuel Oil Co.'s No. 4 Bollinger, 330 ft. N, 330 ft. W, SE cor. Lot 14, Sec. 28-23-11 | Began drlg. Mar. 30; cmtd. 10-in. 198 ft; drlg. 205 ft. |
| Ark. Fuel Oil Co.'s No. 4 Peyton, 200 ft. N, 150 ft. E, SW cor. NW SW, Sec. 30-23-11 | Derrick. |
| Ark. Fuel Oil Co.'s (formerly Muslow Oil Co.'s) No. 1 Barnette, Sec. 25-23-12 | W.O.S.R; 700 ft. oil; 12-ft. sand; T.D. 3,159 ft. |
| Ark. Fuel Oil Co.'s (formerly Muslow Oil Co.'s) No. 2-A Kilgore, Sec. 31-23-11 (no check) | Drlg. 2,600 ft. |
| Ark. Fuel Oil Co.'s (formerly Muslow Oil Co.'s) No. 2 Barnett, 1,002 ft. N, 990 ft. W, SE cor., Sec. 25-23-12 | D.S. test 2,692 ft; small show oil; drlg. 2,695 ft. |
| Ark. Fuel Oil Co.'s (formerly Muslow Oil Co.'s) No. 1 Mark Myer, 1,980 ft. N, 330 ft. W, SE cor., Sec. 36-23-12 | Arranging to deepen; T.D. 3,088 ft. |
| Ark. Fuel Oil Co.'s (formerly Muslow Oil Co.'s) No. 2 Peyton, Sec. 30-23-11 | Arranging D.S. test 3,148 ft. |
| Ark. Fuel Oil Co.'s (formerly Muslow Oil Co.'s) No. 3 Peyton, Sec. 30-23-11 | Tested dry 3,149 ft.; shot formation; W.O.; T.D. 3,175 ft. |
| Ark. Fuel Oil Co.'s (formerly Muslow Oil Co.'s) No. 1 Floyd, 990 ft. S, 330 ft. W, C, Sec. 25-23-12 | D.S. test 10 ft. sand 3,165 ft. dry; T.A.; T.D. 3,176 ft. |
| Bahan & Bahan's No. 1 G. W. May, 660 ft. S, 660 ft. | |

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## WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

**NORTH LOUISIANA**
**AVOYELLES PARISH**

| Company, farm and location— | Remarks— |
|---|---|
| R. E. Tippett's No. 1 Chateline, NE NE, Sec. 34-1n-3e | Cmtd. 12½-in. 550 ft. |
| **BIENVILLE PARISH** | |
| W. A. Nichols et al's No. 1 McDermontt, 660 ft. S, 660 ft. W, NE cor. NE NE, Sec. 28-18-6 | Began drlg. Mar. 23; cmtd. 12½-in. 98 ft.; drlg. 750 ft. |
| **BOSSIER PARISH** | |
| Nell & Lanier's No. 1 Biedenharn, SE cor., Sec. 23-21-14 | W.O.S.R.; 980 ft. oil in hole; T.D. 998 ft.; arranging to re-test at 998 ft. |
| S. P. Lanier's No. 1 Le Rosen, 300 ft. S, 1,000 ft. W, NE cor., Sec. 26-21-14 | Derrick. |
| H. I. Morgan's No. 3 Wetherbee, 4,443 ft. N, 1,120 ft. W, SE cor., Sec. 21-19-11 | D.S. test 2,117 ft.; S.W.; coring 2,146 ft. |
| Walker et al's No. 1 Antrim, NW cor. SE, Sec. 28-22-13 | S.D. 3,184 ft. |
| **CADDO PARISH** | |
| Magnolia Pet. Co.'s No. 1 Swann, 330 ft. N, 380 ft. W, SE cor. NE SW, Sec. 16-21-14 | Drlg. 1,140 ft. |
| L. B. Mawk's No. 1 Swann, 440 ft. N, 200 ft. E. SW cor., Sec. 23-21-14 | S.D. for fuel; T.D. 475 ft. |
| R. W. Norton's No. 1 Hill, 630 ft. N, 1,260 ft. W. SE cor. NE, Sec. 33-23-16 | D.S. test 8-ft. sand 4,479 ft.; S.W.; S.D. 4,496 ft |
| I. N. Pharis, trustee's No. 1 Oden, NE cor. SE NE, Sec. 16-19-14 | S.D. 2,322 ft.; topped sand at 2,396 ft.; set 6⅝-in.; T.D. 2,409 ft. |
| C. W. Robinson's No. 1 Wilson, 990 ft. S. 330 ft. W, NE cor. SE, Sec. 2-15-16 | D.S. test 2,149-61 ft.; dry; drlg. 2,300 ft. |
| Triangle Drlg. Co.'s No. 1 Hardy et al, 660 ft. N, 660 ft. W, SE cor. fractional Sec. 18-19-16 | D.S. test, show oil and gas 1,727 ft., dry; drlg. 1,825 ft. |

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# Deep Well at Refugio Increasing Flow

## Further Possibilities of That Productive Field Are Opened as a Result of the Discovery of a Fourth Pay Horizon

By Neil Williams
*Houston Bureau, The Oil and Gas Journal*

HOUSTON, Tex., Apr. 7.—Union Producing Co.'s No. 1-A Rose Lambert, discovery well of the 6,400-6,500-foot sand on the east side of the Refugio Field, late last week was gradually increasing its flow and giving indications of becoming a good well. This well, which opened a fourth producing horizon at Refugio, was one of the principal developments on the Gulf Coast during the week from the standpoint of revealing further possibilities for that field and more definitely establishing Refugio as one of the greatest potential sources of production along the coast.

The new Lambert well, although lacking a few feet of being the deepest test at Refugio, is the deepest producer not only at this field but also anywhere on the Texas Coast. The previous deepest well in South Texas has been Humphreys Corp.'s No. 8-A Barber on the northwest side of Barbers Hill which has been flowing from a total depth of 6,416 feet. The steel line measurement on the Refugio deep well is 6,468 feet. This is not the deepest production on the entire Gulf Coast as Yount Lee Oil Co. has two 7,500-foot wells on the southeast side of the Jennings Field in Acadia Parish, Louisiana.

### Making 200 Bbls.

On Saturday, the Lambert well was flowing at the rate of a little better than 200 bbls. daily, production being held to a nine-sixteenths-inch choke. The well started coming in late Tuesday after being bailed down 300 feet. At that time it began heading with a pressure of 1,250 pounds. Showing for a 3,000,000-foot gasser, the well then began to flow steadily at the rate of 100 bbls. daily on a quarter-inch choke with a pressure of 1,365 pounds, and since the flow has been increasing steadily.

Production is from a sand at 6,458-68 feet, which sand was found by Independent Oil & Gas Co.'s No. 1 O'Brien last January at a total depth of 6,489 feet. The latter well, however, tested salt water and was abandoned temporarily. The past week it was plugged to 6,480 feet and again tested salt water. The oil from the new deep well is 42 gravity, the lightest of any so far obtained at Refugio.

The Rose Lambert well is approximately 3,500 feet to the northeast of Union Producing Co.'s No. 1 O'Brien, the 5,500-foot discovery well, and about a mile distant from Independent's No. 1 O'Brien, the latter being nearly a mile east and a little south of Union's No. 1 O'Brien. As the territory in this direction has been somewhat of a disapointment as far as the 5,500-foot horizon is concerned, all tests so far drilled having tested salt water, the 6,400-foot horizon opens another possibility of development. The Rose Lambert well, which tested salt water in the 5,500-foot sand along with The Texas Company's No. 1 Shelton, between it and the No. 1 O'Brien, also tested salt water in the 5,900-foot sand which recently was found productive by Union Producing Co.'s No. 1 M. F. Lambert, approximately 2 miles to the northeast of the 5,500-foot production. Independent's O'Brien well also tested salt water in the 5,900-foot sand but this and the Rose Lambert are the only two which have gone on down to the 6,400-foot level. That the latter sand underlies the entire deep sand area on the east side of the field extending from the M. F. Lambert producer on the far northeast to the far southeast, a distance so far a little over 3 miles, is indicated in that the 6,400-foot tests also found the 5,500-foot and the 5,900-foot sands regularly.

### Drilling More Active

A new spurt is being shown in development at Refugio. Houston Oil Co. already has a derrick up for the 6,400-foot test, 350 feet to the west of the new producer on the Rose Lambert farm. It is possible that several abandoned 5,500-foot tests around the discovery well, No. 1 O'Brien, will be deepened to the 6,400-foot level. In the vicinity of the Union's No. 1 M. F. Lambert, 2 miles northeast, Union's No. 2 Lambert is drilling below 5,300 feet and another week should see it in the pay. The latter well is a quarter mile still further east. Union's No. 3 Lambert, on the same tract but to the south of the No. 1, has started and is around 1,000 feet. Independent's No. 1 M. F. Lambert, offsetting Union's No. 2 on the east, although slightly to the north, is drilling at 1,300 feet, and on the south of Union's Lambert tract, a partial offset to the latter's No. 3, T. P. Morgan is starting up in his No. 1 St. John.

At the south end of the 5,500-foot field, Houston Oil Co.'s No. 1 Tom Heard and No. 1 Doughty are in the sand, the former at 5,456 feet and the latter at 5,446 feet. The latter tested gas in a drill stem test at 5,440 feet and is at present waiting orders pending decision to deepen it. Mission Drilling Co.'s No. 1 O'Brien also is preparing to test the 5,500-foot sand which was encountered at 5,406-27 feet. It is waiting cement to set. This company's No. 1 Moss at 5,486 feet tested salt water.

Of particular interest at this time is Morgan Oil Corp.'s No. 1 Power, a wildcat over 1½ miles south of the field which was drilling Saturday in sticky shale at 6,126 feet.

Three wells in the 3,700-foot horizon were among Refugio completions of the week, these being Pearson Properties' No. 1 Johnson flowing 300 bbls. of pipe line oil on a five-sixteenths-inch choke from sand at 3,673-90 feet; Union Producing Co.'s No. 4 Shelly, 500 bbls., 3,647-61 feet, and Independent Oil & Gas Co.'s No. 3 West, gas spraying oil, 3,677-86 feet.

### Building Pipe Line

The posting of prices at Refugio by the Humble Oil & Refining Co. effective April 1, establishing an advance on the heavy oil and putting the light oil on the coastal Grade B schedule, was an important development in the field. Humble is rushing completion of its new line from the field to its refinery at Ingleside, which, when completed and with the lines of the Gulf Coast Pipe Line Co., will furnish more than sufficient pipe line outlet for the field.

Humble Oil & Refining Co. late in the week opened its No. 1 Siadous at Mykawa, south of Houston, and in three hours, the length of time it flowed, it made 67 bbls. of oil. This well was brought in two weeks ago and in a period of nearly 12 hours during which it was allowed to flow it made 34 bbls. This well has been the most encouraging development for oil production at Mykawa although Humble's No. 2 Irvin, completed a number of months ago as a 50,000,000-foot gasser, later made some oil estimated at from 10 to 20 bbls. daily.

Shell Petroleum Corp.'s No. 1 Blakely-Winston, first test on that company's Danbury salt dome prospect in Brazoria County, tested dry in a sand at 4,812-20 feet. This test, which has encountered several oil showing sands, has been one of the most interesting tests on the Gulf Coast from a new dome standpoint. From a sand at 1,572-77 feet it swabbed some oil, enough to indicate that it could be completed as a small pumper at that depth but in view of plans for a deep test it has been deepened.

On the northwest side of the Humble Dome, Southern Drilling & Producing Co. completed a good well in its No. 1 Alio. With two joints of screen at 3,978 feet it flowed 1,000 bbls. daily. This well offsets John Deering's No. 5 Bissonett, completed a couple of months ago flowing 1,700 bbls. daily at 4,039 feet. These wells open a new producing depth for that particular sector of the dome. The Deering well has proved an unusually consistent producer with production holding up steadily.

Wright Brothers late in the week completed their No. 7 Drushell in the Edna gas field gauging 17,000,000 feet of dry gas with pressure of 1,660 pounds. This well opens a new producing sand at 3,884-91 feet. One joint of screen, one joint of liner and 2-inch tubing were set in the hole. Although several gas wells have been completed in the past at this field, operations there have been somewhat of a disappointment in view of salt water which usually drowned out the wells quickly.

Completions of the week included two additional producers the forepart of the week at the new Esperson (Sheeks) Field, western Liberty County, another good well by Navarro Oil Co. on the east side of Pierce Junction, a half dozen deep sand producers at Barbers Hill, and a number of other small wells scattered over various coastal fields, including Hull, Sour Lake, Batson, Saratoga, Spindletop, Raccoon Bend and DeWalt.

Production of coastal fields continued its upward trend the past week. Daily average figures for the week were 213,179 bbls., the highest in the history of the coastal territory. A daily output of nearly 43,000 bbls. at Refugio and 30,000 bbls. at Barbers Hill, the two leading fields on the coast, has set new peaks for those fields which were reflected in the total coastal production. Daily production by fields for the week ending April 5 was:

**SOUTHEAST TEXAS**

| Pool— | Bbls. |
|---|---|
| Allen | 24 |
| Barbers Hill | 29,760 |
| Batson | 1,185 |
| Big Creek | 2,989 |
| Blue Ridge | 1,934 |
| Brenham | 125 |
| Boling | 1,133 |
| Clay Creek | 1,657 |
| Damon Mound | 595 |
| DeWalt | 10,519 |
| Fannett | 1,188 |
| Goose Creek | 5,240 |
| Hankamer | Off |
| High Island | 1,130 |
| Hull | 8,903 |
| Humble | 19,658 |
| Jasper County | 25 |
| Lost Lake | 555 |
| Markham | 328 |
| Nash | 311 |
| North Dayton | 265 |
| Orange | 2,458 |
| Orchard | 1,932 |
| Pierce Junction | 11,780 |
| Port Neches | 2,181 |
| Raccoon Bend | 10,289 |
| Refugio | 42,530 |
| Sheeks (Esperson) | 3,990 |
| Saratoga | 1,018 |
| Sour Lake | 2,329 |
| South Liberty-South Dayton | 4,628 |
| Spindletop | 16,106 |
| West Columbia | 6,336 |
| Total Southeast Texas | 193,101 |
| Last week | 189,982 |
| Increase | 3,119 |

**SOUTH LOUISIANA**

| Pool— | Bbls. |
|---|---|
| Anse La Butte | 50 |
| Bayou Blue | 86 |
| Bayou Bouillon | 895 |
| Black Bayou | 50 |
| Edgerly | 550 |
| Jennings | 928 |
| Hackberry | 2,816 |
| Lake Barre | 2,053 |
| Lake Pelto | 201 |
| Lockport | 2,649 |
| New Iberia | 7 |
| Port Barre | 1,452 |
| Sorrento | 86 |
| Starks | 416 |
| Sulphur | 3,150 |
| Sweet Lake | 125 |
| Vinton | 3,999 |
| Welsh | 182 |
| White Castle | 383 |
| Total South Louisiana | 20,078 |
| Last week | 20,480 |
| Decrease | 402 |
| Total Gulf Coast | 213,179 |
| Last week | 210,462 |
| Increase | 2,717 |

## GULF COAST FIELDS AND WILDCATS

**Week Ended April 5**

**BARBERS HILL—CHAMBERS COUNTY**

| | |
|---|---|
| Mills Bennett Production Co.'s No. 2 Barber, north side | Drlg. shale 6,962 ft. |
| Mills Bennett Production Co.'s No. 7 Barrow, north | Drlg. shale 5,600 ft. |
| Mills Bennett Co.'s No. 1 Gulf fee | Comp. flowing 2,230 bbls. pipe line oil 5,380 ft. |
| Mills Bennett Production Co.'s No. 4 Wilburn, southeast | Fishing 1,729 ft. |
| Mills Bennett Production Co.'s No. 2 Gulf fee, southeast | Rigging up. |
| Fell & Thornton's No. 1 McLain | Drlg. 712 ft. |
| Gulf Production Co.'s No. 4 Wilburn, southeast | Location. |
| Gulf Production Co.'s No. 5 Wilburn, southeast | Location. |
| Humphreys Corp.'s No. 1-F Barber, northwest | Drlg. sandy shale and lime 4,929 ft. |
| Humphreys Corp.'s No. 2-C Kirby | Drlg. shale 2,004 ft. |
| Humphreys Corp.'s No. 4-H Kirby (workover) | Pulling liner to deepen. |
| Humphreys Corp.'s No. 1 Morgan | Drlg. hard lime 5,289 ft. |
| Humphreys Corp.'s No. 2 Scott | Drlg. shale and lime 2,121 ft. |
| McAlbert Oil Co.'s No. 1 Higgins | Comp. flowing 760 bbls. net oil 5,368 ft. |
| McAlbert Oil Co.'s No. 5 Woodward, southeast | Derrick. |
| Sinclair Oil & Gas Co.'s No. 3 McKinney fee | Drlg. gumbo and lime 4,475 ft. |
| Sinclair Oil & Gas Co.'s No. 5 Wilburn, southeast | Comp. flowing 1,100 bbls. oil 5,216 ft. |
| Sinclair Oil & Gas Co.'s No. 6 Wilburn, southeast | Drlg. sand and lime 2,114 ft. |
| Sinclair Oil & Gas Co.'s No. 7 Wilburn, southeast | Rig. |
| Sun Oil Co.'s No. 4 McKinney fee | Drlg. shale and lime 4,453 ft. |
| Sun Oil Co.'s No. 5 Wilburn fee, southeast | Drlg. shale and lime 4,218 ft. |
| Sun Oil Co.'s No. 6 Wilburn fee, southeast | Sidetracked and drlg. 2,335 ft. |
| Sun Oil Co.'s No. 5 J. Wilburn, southeast | Drlg. 1,612 ft. |
| Sun Oil Co.'s No. 6 J. Wilburn, southeast | Drlg. shale and lime 1,735 ft. |
| F. L. Thompson's No. 2 Wilburn southeast | Drlg. lime 3,019 ft. |
| F. L. Thompson's No. 3 Wilburn, southeast | Rig. |
| Yount Lee Oil Co.'s No. 11 Chambers, south | Comp. pumping 220 bbls. fluid, 98 per cent salt water 5,624 ft. |
| Yount Lee Oil Co.'s No. 13 Chambers, south | Drlg. sandy shale showing oil 5,285 ft. |
| Yount Lee Oil Co.'s No. 3 Phillips, southeast | Total depth 5,068 ft.; sidetracking 2,700 ft. |

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# May Extend Bruner Field Northeast

## Now Thought There Is a Cross Fault in Darst Creek Field Following Line of the Three Crevice Producing Spots

By B. D. Stevenson
*Staff Correspondent, Southwest Texas Fields*

SAN ANTONIO, Tex., Apr. 7.—Magnolia Petroleum Co.'s No. 1-A Roamel which gauged 42,000 bbls. and has been prorated to about 1,200 bbls. is still an overshadowing feature of the oil business in Southwest Texas and is causing considerable activity in leases in that part of the country. Darst Creek, long since, showed that it would not be a straight line of wells like the old Luling and the Joe Bruner Fields. It is pretty evident now that there is a cross fault following the line of the three crevice producing spots extending from the Penn Oil Co.'s No. 1 Manford on the east to the Magnolia Petroleum Co.'s No. 1-A Roamel on the west and passing through the area of the Magnolia Petroleum Co.'s No. 1 Appling. The Edwards lime producing part of the Darst Creek Field is about 4 miles long and extends from a little southwest of the discovery well northeast to the line described.

Last week the Gulf Production Co.'s No. 1 Malser in the north part of the Jerome B. Alexander Survey, 150 feet from the northwest and southwest lines of the Malser 72-acre tract tested 20 feet of dry Serpentine. This test is near the line from the Penn Oil Co.'s No. 1 Manford to the Magnolia Petroleum Co.'s No. 1 Roamel and is at the northeast end of the Edwards lime producing field. It probably marks the end of the field.

There has been some top-leasing in the Darst Creek area as a result of the Magnolia's big well and the aroused interest due thereto, and some uncertainty as to just what is going to happen in the field. The Magnolia Petroleum Co.'s No. 1 Roamel is considerably to the west of the regular line of Edwards lime producing wells and it is being offset on the southeast by the North & South on the Dix lease and the Magnolia is starting its No. 2 Roamel 300 feet southwest of No. 1.

Golden West has leased 10 acres within 800 feet of the Magnolia's No. 1 Roamel. A 10-acre tract out of the west corner of the Roamel 150-acre tract has been sold for $750 an acre and the lease carries a one-thirty-second overriding royalty. The Magnolia's No. 1 Roamel is in the east corner, diagonally across the tract and 2,000 feet away.

### May Extend Bruner Field

A lot of interest is centered in H. S. Morgan's No. 1 Perry in the John D. Raines Survey, a mile northeast of nearest production in the Joe Bruner Field. The last producer on the northeast was completed by the Humble Oil & Refining Co. on the New tract in the James Hinds Survey. Morgan's test was reported last week showing considerable gas at about 1,400 feet. Late last week it was down 2,050 feet and showing more gas—enough to put the returns 15 feet over the rotary table and it is in the Taylor marl. It is running about right to pick up the chalk at regular depths and sure looks interesting. The Gulf Production Co. is drilling on a location between the Morgan test and the nearest producer in the Bruner Field. About the only reason drilling stopped with the Humble test on the New tract was the absence of any necessity to drill offsets.

### Pettus Area in Bee

Houston Oil Co.'s No. 1 Portis, 8,000 feet southwest of the discovery oil well of the Pettus Field and which was currently supposed to be a well is drilling deeper. Late last week it was down about 4,000 feet. Information had not been flowing freely from the test and the supposition that it was a producer at the regular depth of wells of the field was seemingly based on its shutting down there and rumors of additional acreage being taken. With the exception of the abandonment of the Morgan-Tidal Oil Corp.'s No. 1 Ray in Bee County, southwest of the Pettus Field as a dry hole and the testing of the Morgan-Tidal Oil Corp.'s No. 1 Ray in Goliad County, 1 mile north of the F. P. Zoch gasser on the Kaufman tract and northeast of the Pettus Field, and taking of additional leases by the Gulf Production Co. there has not been much progress in the Pettus Field the past week. The Morgan-Tidal's No. 1 Ray in Goliad has reached a total depth of 4,515 feet. It tested a sand at 4,330 feet, dry.

The "play" from the Pettus Field is extending far to the northeast into DeWitt and Lavaca Counties. Commercial leases considerable distance from any drilling test and far from the field are selling as high as $4 an acre, and in some portions of DeWitt County on good geology royalties have sold as high as $20 an acre. Gulf Production Co. has extended its holdings to the northeast of the field. McElreath & Suggett started their test in Lavaca County 40 miles or so to the northeast on the J. Heinsohn tract in the G.Q.&W.H. Survey.

Off to the southwest of the Pettus Field the test that is watched with interest is Fisher & Wiggins' No. 1 Kimball in the Stephen Winship Survey, which made a lot of gas at about 800 feet and thus first attracted attention. It was last reported at 2,600 feet where it was coring after having passed through some hard lime. Due to a breakdown the operations were shut down to repair the rig.

### Live Oak County

A test watched with interest is the Houston Oil Co.'s No. 3 Dunning in the Lucas or Cartwright gas field in Live Oak County approximately 25 miles nearly due south of the Pettus Field. No. 2 Dunning, which was the company's first deep test in the field, was abandoned at 5,135 feet because of a bad fishing job. No. 3 which will be the second deep test in the field has set 15½-inch surface casing and is ready to go again. Multiplicity of sands in other fields of the coast country is causing deeper drilling in proven areas where deep drilling had not previously been attempted.

### Kendall County

There seems now no question but that a lot of oil can be taken out of the Sterling's No. 1 Willie Werner in Kendall County. The test has been all completed and equipped and shut in and has built up pressure so it will flow considerable oil. The Seaboard Oil & Gas Co.'s No. 1 Askey, 3 miles northeast of Sisterdale and 3 miles northwest of the Sterling well, is down about 600 feet and is underreaming at 545 feet. Total depth of the Sterling well is about 900 feet. The Seaboard test is said to be looking pretty good also. This wild, wild, wildcat country is due to play an important factor in the oil business of Southwest Texas. It is in the territory south of the Llano uplift and north of the Balcones fault and not more than a dozen tests have ever been drilled for oil in a territory of a dozen counties and the Sterling test seems to have been the first ever drilled in Kendall. No one ever had anything against the country before but everyone has been too busy drilling in the "warmer" and more active areas. The Sterling test at about 900 feet is just about in the top of the Pennsylvanian and nothing has ever been drilled deeper so no one knows what is to be had with a deep test. Some shallow drilling by independents to get the lay of the land will help to work out the geology of the county.

### Laredo District

One 10-bbl. well was completed by the Humble Oil & Refining Co. in the Laredo district, No. 43 Kohler, in sand at 1,744-50 feet in Survey 169 of the Kohler Field in Duval County.

Operations are being started in the Robert Driscoll Pool in Duval County about midway between the Cole gas pool on the southwest and the Piedras Pintas salt dome on the northeast. Operations were interrupted by the death of Robert Driscoll who brought in a field on land he owned in fee. No. 11 fee was a 40,000,000-foot gas well at 2,457-61 feet. It is being deepened to the 2,900-foot sand which is producing oil in three tests completed.

Daily average production for week ending April 5:

SOUTHWEST TEXAS

| Pool— | Bbls. |
|---|---|
| Branyon | 23 |
| Buchanan | 621 |
| Bruner | 20,951 |
| Dale | 347 |
| Darst Creek | 16,519 |
| Kingsville | 121 |
| Larremore | 101 |
| Luling | 9,625 |
| Lytton Springs | 834 |
| Manford | 1,110 |
| McMullen County | 35 |
| Medina County | 22 |
| Mirando | 3,371 |
| Pettus | 1,080 |
| Somerset | 1,531 |
| Star County | 20 |
| Taylor | 160 |
| Yoast | 645 |
| Total Southwest Texas | 62,114 |
| Last week | 65,645 |
| Decrease | 3,531 |

## WILDCAT OPERATIONS IN SOUTHWEST TEXAS

| Company, farm and location— | Remarks: |
|---|---|
| **AUSTIN COUNTY** | |
| Humble O. & R. Co.'s No. 8 R. Thompson, 6,660 ft. SE of S cor. of William Smeather Sur. in the W. C. White Sur. | Dropped from reports; reported in error. |
| Empire Gas & Fuel Co.'s No. 1 J. T. Boyd 75-ac. tract, 300 ft. S of CNL of tract in the S. F. Austin Sur. | Dropped from reports; reported in error. |
| **BASTROP COUNTY** | |
| H. C. Cate et al's No. 1 C. L. Lackey, 5,150 ft. NW line, 1,500 ft. SW line of 219-ac. tract, in the Joshua Gray Sur., 2 miles W from Bateman | T. D. 2,450 ft.; shut down in chalk. |
| Superior Oil Co.'s No. 1 J. M. Moore, 500 ft. from N line, 500 ft. from E line of 106-ac. tract in the G. T. Glasscock Sur. | Rigging up. |
| B. L. Batts et al's No. 1 A. A. Alexander, W. M. Eastland Sur., 4,190 ft. to NW line, 1,320 ft. to SW line of Sur. | T. D. 1,360 ft.; drlg. in shale. |
| **BEE COUNTY** | |
| Nichols Oil Corp.'s No. 3 Hicks, 500 ft. N-S line, 500 ft. E-W line of Blk. 19, just S of Normanna, 350 ft. SE of No. 2 Hicks discovery | T. D. 2,010 ft.; cored and tested sand at 1,985-2,000 ft.; gas show. |
| Morgan Oil Corp.'s No. 1 Mrs. R. A. McKinney, 350 ft. N of S line, 2,640 ft. W of E line of Mrs. R. A. McKinney tract, in the Ryland C. Ballard Sur. | T. D. 1,682 ft.; drlg. in shale and gumbo. |
| Rowan & Tong's No. 1 F. O. Massengale 350-ac., 150 ft. from S line, 3,184 ft. from W line of tract and survey, north John Pace Sur., 1½ miles W from Pettus Townsite | Derrick. |
| Ed Price's No. 1 Mrs. Laura E. Weiss, 200 ft. out of NW cor. of B.&B. 640-ac. Sur., E of Normanna, 6 miles W of Blanco Creek, in the B.&B. Sur. | Derrick. |
| Houston Oil Co.'s No. 1 J. F. Portis 288.3-ac. 1 mile SW of No. 1 McKinney, in the A. Smalley Sur. | T. D. 3,940 ft.; tested salt water and small amount of oil; drlg. deeper. |
| Fisher & Wiggins' No. 1 A. J. Kimbell, C 189 acres, in the Stephen Winship Sur. | T. D. 2,600 ft.; coring sand. |
| **BEXAR COUNTY** | |
| Texas Pet. Co.'s No. 3 H. C. Gayle, 700 ft. S of No. 2, Blk. 39, in the C. A. Yoakum Sur. | T. D. 1,400 ft.; comp.; pumped 5 bbls. |
| Moore-Jauer's No. 1 Holly R. Ellison | T. D. 2,005 ft.; drlg. in gumbo. |
| **BROOKS COUNTY** | |
| Humble Oil & Ref. Co. and Shell Pet. Corp.'s No. 1 Singer, Alta Verde Subd., 2,500 ft. S and N line, 333 ft. W and E line of Section 312 | T. D. 4,560 ft.; drlg. in shale and sand. |

(Continued on Page 147)

### COMPLETIONS

**Kohler Pool—Duval County**

E. H. Buckner's No. 2 Peters, 1,980 feet south line, 660 feet west line, Survey 161, total depth 1,703 feet, 15,000,000 feet of gas, 535 pounds rock pressure.

**Darst Creek—Guadalupe County**

The Texas Company's No. 5 Henry Willie, 150 feet from north and east lines of tract in the J. C. Darst Survey, total depth 2,620 feet, swabbing 225 bbls. Same company's No. 6 Dallas Wilson, 75 feet from south and west lines of tract in the J. C. Darst Survey, total depth 2,612 feet, swabbing 400 bbls. Same company's No. 3-A Knoblock, 626 feet northeast of No. 2-A, total depth 2,480 feet, flowing 4,300 bbls. per day. Same company's No. 4-A Knoblock, 300 feet northeast of No. 3-A, total depth 2,545 feet, flowing 3,800 bbls.

Magnolia Petroleum Co.'s No. 1 Roamel, 150 feet each way out of southeast corner of M. E. Roamel 50 acres, center of J. R. Robinson Survey, total depth 2,321 feet, flowing 34,500 bbls.

Humble Oil & Refining Co.'s No. 11-A Denman, 1,921 feet west of southeast corner, 150 feet north and south lines of survey in the A. S. Emmett Survey, total depth 2,622 feet, swabbed 800 bbls. Same company's No. 12-A Denman, 150 feet south line, 300 feet west of No. 11-A in the A. S. Emmett Survey, total depth 2,618 feet, swabbing 1,100 bbls.

The Texas Company's No. 3 Posey Baker, 1,510 feet from northwest line, 300 feet southwest line of tract offset to Humble's No. 9-A Denman in the J. R. Robinson Survey, total depth 2,619 feet, swabbed 2,000 bbls.

**Bruner Pool—Caldwell County**

Humble Oil & Refining Co.'s No. B-4

(Continued on Page 150)

# Drilling Stimulated in Hobbs Pool

## Follows Announcement of Pipe Line Construction. Eastern Colorado to Be Given Tests in Formations Never Before Drilled

By Tolbert R. Ingram
*Staff Correspondent, Rocky Mountain Area*

DENVER, Colo., Apr. 7.—Drilling activity in the Hobbs area in Lea County, New Mexico, is being stimulated by the announcement that the Humble Pipe Line Co. and the Shell Pipe Line Co. will both build lines into that district from the south. New locations have been made one each by the Humble Oil & Refining Co., the Midwest Refining Co. and the Landreth Production Co. In Eddy County L. M. Lockhart and others' No. 2 Wooley, in the Maljamar area, and Flynn, Welch & Yates' No. 57 State in the Artesia area, are being abandoned.

Several tests to the Pennsylvanian formation in areas in Colorado where that formation has never been drilled are contemplated this summer. Eastern Colorado is receiving more than the ordinary attention from land departments and extensive geological and geophysical work is being done. The White Eagle Oil & Refining Co.'s test at Piceance Creek in Rio Blanco County is showing more gas and the Mountain Fuel Supply Co. has a show for 1,000,000 feet of gas per day on the Bartram Dome in Moffat County in a Tertiary sand that carried water in nearby tests. One well was abandoned, another is shut down with water in the objective and two new wells are being started in the Florence district in Fremont County.

The Butler Valley test of the Utah Oil Refining Co. in Utah is drilling towards the Kaibab formation with water in the hole from the red beds.

The Mountain Fuel Supply Co.'s No. 1 Union Pacific in South Baxter Basin, Sweetwater County, Wyoming, has increased its gas flow from 8,000,000 to 23,000,000 feet a day. The Salt Creek deep test is drilling towards the Madison and the deep test on the Mahoney Dome in Carbon County is being deepened after swabbing 75 bbls. a day.

### NEW MEXICO

The Hobbs Pool in northeastern Lea County, New Mexico, in which the discovery well was completed by the Midwest Refining Co. in the fall of 1928, and in which the Humble Oil & Refining Co. drilled in the largest well ever completed in that State, will have two pipe line outlets for its production at an early date. The Humble Pipe Line Co. has begun the construction of a 50-mile extension of its line from the Jal Pool in southeastern Lea County, northward into the Hobbs area. The present terminus of this line, which consists of 8-inch screw pipe, is in the NE, Section 24-25-36, to which point it was extended from its Winkler County, Texas, connection. The Shell Pipe Line Co. will begin the construction of a 10-inch line out of Winkler County northward into the Hobbs area as soon as the pipe and other materials are received. This line, which will be approximately 75 miles long, will almost parallel the Texas & New Mexico Railroad which is under construction northward through Lea County to Lovington. Both the Humble and Shell companies have producing wells in the Hobbs Pool and are drilling additional wells. Most of the production in the pool other than that of these two interests is owned by the Midwest Refining Co. That company, it is understood, has not yet made any definite decision as to what it will do with its oil. There has been considerable talk that it will build a refinery either at Hobbs, or at Lubbock, Texas, and construct its own line to the plant, but this is discredited by officials in Denver who say that that territory already has enough refineries to take care of all requirements. The Hobbs area is now the most active in southeastern New Mexico and with provisions for marketing the oil this is expected to increase, but so far there is no indication of an unrestricted drilling program by any of the companies. The Midwest will conduct a normal, but modest drilling campaign and the other companies are expected to be equally as conservative. Operations in that district include the following:

#### Hobbs Area—Lea County

The Humble Oil & Refining Co.'s No. 2 Bowers, NW cor. SE, Section 30-18-38, is a location. This well has been spotted about one-third of a mile west of its No. 1 Bowers, NE cor. SE, Section 30-18-38, which made 2,149 bbls. of pipe line oil in six hours when it was tested two months ago. It was then shut in indefinitely. The new Humble location is an offset on the east to the Ohio Oil Co.'s No. 1 State, NE cor. SW, Section 30-18-38, which was completed rigging and drilled a water well and is shut down for orders. The Landreth Production Co.'s No. 1 States, NW cor. SE, Section 7-18-38, farther to the north, also is a new location. The Midwest Refining Co.'s No. 33 Byers, SE SW NE, Section 4-19-38, also is a new location. The footage is 1,650 feet from the east line and 2,310 feet from the north line. It is three-fourths of a mile to the northwest of the Midwest's No. 1 State, the discovery well and the nearest producer, and 1¼ miles southeast of the Sun Oil Co.'s No. 1 State, a location in the NE cor., Section 5-19-38. The Ohio Oil Co.'s No. 1 State-Northrup, NE NW SE, Section 32-18-38, is bottomed at 2,752 feet and fishing for one joint of 10-inch pipe. The Shell Petroleum Co.'s No. 1 State, SE SW NE, Section 32-18-38, an offset on the north to the Ohio's well, is drilling at 2,065 feet in salt. The Shell Petroleum Co.'s No. 1 McKinley, SW cor., Section 19-18-38, cemented the 12½-inch on bottom at 218 feet in red shale and is waiting. The Texas Pacific Coal & Oil Co.'s No. 1-G State, SE cor., Section 24-18-37, an offset on the west to the Shell well, is spudding. The Hobbs High, Inc.'s No. 1 Tatum, NW SW SW, Section 35-18-38, is shut down for orders after completing standard rig. Fisher & Lowrie's No. 1 State, NE cor. NW, Section 11-18-36, west of the Hobbs Pool, is drilling at 3,730 feet in anhydrite and lime.

#### Tatum Area—Lea County

A. D. Morton and others' No. 1 State, C NW, Section 32-11-36, is bottomed at 4,450 feet in lime and running the 6⅝-inch casing.

#### Eunice Area—Lea County

The Ohio Oil Co.'s No. 1 State-Mc Donald, NW SW, Section 15-22-36, commenced spudding on March 24 and is drilling at 110 feet in red rock. The Empire Gas & Fuel Co.'s No. 1 Closson, NE NW SE, Section 6-22-36, is still tied up at 3,869 feet fishing for tools, and the Continental Oil Co.'s No. 1 William Meyer, SW NW, Section 28-22-36, is shut down at 3,593 feet for contractor's orders.

#### Cooper Area—Lea County

Cranfill & Reynolds' No. 1-C State, SW SE SW, Section 16-23-36, is drilling at 3,617 feet in white lime. It had an oil show at 3,605 feet. It also had shows for several million feet of gas about 200 feet above present depths. The Texas Pacific Coal & Oil Co.'s No. 4 State, NW NE NW, Section 21-23-36, an offset on the south to the Cranfill & Reynolds well, commenced spudding on March 21 and is drilling at 480 feet in the red beds.

#### Lea Area—Lea County

Cranfill & Reynolds' No. 1-D State, SE cor., Lot 6, Section 3-21-33, the only drilling well in this area, is drilling at 3,740 feet in anhydrite.

#### Maljamar Area—Lea County

The Maljamar Oil & Gas Co.'s No. 3 Baish, SE NE NW, Section 21-17-32, commenced spudding on March 21 and is drilling at 322 feet in pink shale.

#### Chaves County

The Cactus Petroleum Co.'s No. 1 State, SE cor., Section 14-10-26, is drilling at 2,235 feet in gray lime.

#### Eddy County—Maljamar Area

L. M. Lockhart and others' No. 2 Wooley, NE cor., Section 28-17-30, encountered sulphur water at 3,560-65 feet, the hole making two bailers per hour, and is plugging to abandon. It had a show of oil at 3,095-3,104 feet. Henderson, Dexter & Blair's No. 1 Arnold, SE SE, Section 23-17-30, is bottomed at 3,678 feet and testing an oil show after plugging off bottom water. Flynn, Welch & Yates' No. 2 Stevens, NE SW, Section 13-17-30, is shut down for casing at 2,945 feet in lime. Lockhart & Co.'s No. 3 Parks, NE cor. SW (cor.), Section 15-17-30, is shut down at 40 feet. The Pueblo Oil Co.'s No. 5 Russell, SW cor. NW, Section 18-17-31, is drilling at 575 feet in salt and Leonard & Levers' No. 2 State, SE cor. NW, Section 21-17-29, total depth 2,360 feet, was shot with 40 quarts at 2,280-95 feet and is cleaning out 10 feet off bottom. The gas is estimated at 600,000 feet a day. Henderson, Dexter & Blair's No. 1 Grier, SW cor. NW, Section 21-16-31, is drilling at 2,305 feet in hard white lime.

#### Artesia Area—Eddy County

Flynn, Welch & Yates' No. 57 State, NE cor. SE, Section 19-19-28, was drilled to 3,402 feet and is being abandoned. It had a show of oil at 3,055 feet. It had sulphur water at 2,715-30 feet.

#### Southwest Area—Eddy County

F. B. Van Horn's No. 1 Santa Fe, SE SE, Section 18-19-26, is bottomed at 1,665 feet and fishing for tools, and R. D. Compton's No. 1 State, SW cor. NW, Section 2-20-25, is drilling at 1,275 feet in lime.

#### Curry County

Clovis, in Curry County, now has natural gas, the supply being piped into the town by the Pecos Valley Gas Co. A gas exposition was held to inaugurate the service and a giant gas torch on top of the Amusement Auditorium was ignited with a roman candle held by Mayor D. L. Lancaster. More than 2,000 persons were in attendance.

#### Santa Fe Franchise

Citizens of Santa Fe approved the action of the city council in granting a natural gas franchise to the Southern Union Gas Co. by a vote of 1,138 to 71. The gas will be piped from San Juan County in the northwestern part of the State.

#### San Juan County

The Continental Oil Co. is putting into operation at its Farmington refinery a new plant for mixing Ethyl Gasoline

(Continued on Page 162)

## NEW TREND OF DEVELOPMENT POSSIBLE IN TURNER VALLEY FIELD

By Victor Lauriston
*Staff Correspondent, Canadian Fields*

CHATHAM, Ontario, Apr. 5.—Latest developments in Turner Valley show one definite addition to the producing wells, with 3 others apparently in production and some 17 additional tests working in the deep lime.

In the far south, Sterling Pacific Oil Co.'s No. 1, LSD 15, Section 33-18-2w5, down 6,525 feet, was shot after drilling through the lime into a shale horizon. The official statement is that it looks like a small well, but unofficial reports estimate crude naphtha recovery at between 45 and 50 bbls. It is the farthest south deep lime producer in Turner Valley and was drilled by Imperial Oil, Ltd.

In Section 4-19-2w5, South Turner Valley, Mill City Petroleums' No. 1, LSD 14, is reported 424 feet in the limestone at 4,954 feet. It looks like a fair producer, possibly 80 to 100 bbls. a day, and represents a still further extension.

In Central Turner Valley, Freeman-Lundy Syndicate's No. 1, LSD 10, Section 1-20-3w5, is 221 feet in the lime at 5,119 feet, making about 7,000,000 feet of gas, and drilling.

In the North Turner Valley, Model Oils' No. 1, LSD 8, Section 22-20-3w5, is 95 feet in the lime at 5,895 feet, with 6,000,000 feet of wet gas and apparently blowing into bigger production with the tools removed. It looks good for 100 bbls. a day and may do better. It proves an important extension of the northern field about 1½ miles west of the Vulcan and Spooner producers.

#### Imperial Tests

In the South Turner Valley, Baltac Oils' No. 1, LSD 13, Section 20-19-2w5, 346 feet in the lime at 5,874 feet, has been shot and may prove a small commercial producer. Imperial Oil, Ltd., has arranged to proceed with Home Oil Co.'s Nos. 7 and 8 in Section 20-19-2w5.

In the South Turner Valley, Merland Oil Co.'s No. 1, Section 27-18-2w5, has derrick finished and is rigging up with rotary equipment to deepen from the Dalhousie sands at 4,470 feet to the lime. In Section 20-19-2w5, Freehold Oil Corp.'s No. 2, LSD 8, is drilling 120 feet in the lime at 4,220 feet, with some gas.

#### Calmont Operations

Calmont Oils, Ltd., with a string of 12 tests at various stages, including eight drilling, partly drilled or located in LSD 11, Section 20-19-2w5, is now probably the most active independent company in Turner Valley. At present, operations are being concentrated on the Dallas tract, LSD 11.

#### Central Turner Valley

In the Central Turner Valley, Sioux City Oils' No. 1, LSD 10, Section 1-20-3w5, is the latest test to get the deep lime, entering that horizon at 4,385 feet. It is logging considerably shallower than Freeman-Lundy's No. 1.

Okalta Oils' No. 1, LSD 1, Section 1-20-3w5, is reported making around 200 bbls. after cleaning out to overcome freezing.

In LSD 14, Section 12-20-3w5, Illinois-Alberta Oils' No. 2, is rebuilding derrick, preparatory to resuming drilling at 3,684 feet after a shutdown of several months. This test offsets No. 1, which after several years' steady production is making around 45 bbls. a day from the lime. New McDougall-Seguar Oil Co.'s No. 3, same LSD, is drilling in the Dalhousie sands

(Continued on Page 154)

# STRAIGHT-HOLE

## Advantages of a Long Bit

**THE T-I-W-CHRISTIAN gives you all the advantages of a short bit and a long bit, without the disadvantages of either.**

**A superior feature in the design of the water courses is that the same size hole is drilled through shank and body of bit as that of the drill stem and tool joints. Thus the water is carried through the same size hole to very close to the cutting edge before being reduced to the two smaller holes that lead to each half of the blade.**

# PRESSURE-AT-THE-BOTTOM

## Advantages of a Short Bit

**Thus the T-I-W-CHRISTIAN BIT puts the maximum water pressure close to the bottom of the bit, no matter how long a bit is used. This principle has won great favor with experienced drillers who formerly used short bits for their faster drilling and long bits for straight hole.**

**Now the T-I-W-CHRISTIAN BIT gives both advantages in one bit—the straight-hole advantages of a long bit with the pressure-at-the-bottom advantages of a short bit.**

## *These Principles in the T-I-W-Christian Bit Give Speed and a Straight Hole*

**More strength from tubular construction** than from the same material in another form. In the T-I-W-Christian there is only one hole through the shank and the body of the bit and that right through the center, thus obviating the reduction of strength that takes place when holes are drilled through the outer radius at points of greater tortion, as is the case with most fish tail bits.

**The material and workmanship** in this bit are the result of 20 years' experience of the manufacturers, enabling them to select the best possible steel for fish tail drilling. This experience is reflected in the workmanship that goes into these bits, the machine finish and other qualities that are immediately evident to experienced drillers.

**Builds up sidewall.** Note the oval shape of the body of the bit. This shape is the result of successful experiments to construct a bit that would contribute to a high degree in the building up of the side wall. This shape of bit tends to plaster or shove the mud out into the wall, helping to build it up.

**Prevents balling up.** The oval shape gives the bit another important advantage over flat bodied bits. When this oval bit is rotating, there is less tendency for balling up, a feature that is not only immediately evident to the casual observer, but is conclusively proven by test and field experience.

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# TEXAS IRON WORKS

**1401-1423 Maury Street**
**Houston, Texas**

# To Continue California Curtailment

## Operators Decide to Extend It for Another 30 Days Regardless of Effect of the Gas Conservation Law

By L. P. Stockman
*Staff Correspondent, California Fields*

LOS ANGELES, Calif., Apr. 5.—The California General Operators' Committee on oil curtailment unanimously indorsed a proposal made at the regular monthly meeting this week to continue the existing crude oil curtailment program for another 30 days regardless of the effect produced by enforcement of the gas conservation law. While the general production situation has shown a substantial improvement during the past 60 days and should reflect a further improvement through operation of the gas law that it would be wise to continue present crude oil curtailment. The committee also instructed Umpires Grimm and Anderson to continue their activities in all fields regardless of future enforcement of the gas law on the assumption that any relaxation of supervision at the present time would have a tendency to break down the crude oil curtailment program and possibly jeopardize the success of this movement with the ultimate objective in sight.

The Fact Finding Committee, headed by W. E. (Steve) Dunlap of the Richfield Oil Co., reduced the allowable daily production of the State from 605,218 bbls. to 603,289 bbls., based on a total potential of 1,081,382 bbls. daily, as compared with 1,085,527 bbls. established at the previous semimonthly meeting. The reduction in Group No. 1, comprising a number of flush and semiflush fields, was maintained at 43 per cent of the potential. The committee slashed the potential daily production of Santa Fe Springs from 232,140 bbls. to 208,921 bbls. and assigned this field a new allowable of 119,085 bbls. daily. Current of Santa Fe Springs at the time the report was made was 129,429 bbls. daily. Enforcement of the gas conservation law has subsequently reduced actual production still further. The potential daily production at Long Beach, due to the recent completion of several large wells, was increased to 166,912 bbls. daily, as compared with the previous established potential of 162,000 bbls. The new allowable production for this field was set at 95,140 bbls., with current production approximating 97,912 bbls. daily.

**TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS**

| Commodity— | Total this week | Daily average | Total last week | Daily average | This year to date | Same time last year |
|---|---|---|---|---|---|---|
| Crude oil | ..... | ..... | ..... | ..... | 77,406 | 250,325 |
| Fuel oil | ..... | ..... | ..... | ..... | 71,950 | 49,950 |
| Diesel and gas oil | 74,115 | 10,588 | 145,211 | 20,744 | 1,214,712 | 723,749 |
| Gasoline | ..... | ..... | 290,112 | 41,445 | 4,141,600 | 4,992,268 |
| Naphtha distillate | ..... | ..... | ..... | ..... | ..... | 81,750 |
| Coastwise— | | | | | | |
| Crude oil | 254,088 | 36,298 | 279,000 | 39,857 | 3,636,932 | 7,068,934 |
| Fuel oil | 456,503 | 65,215 | 359,476 | 51,354 | 4,579,778 | 5,355,069 |
| Diesel and gas oil | 39,070 | 5,581 | 34,026 | 4,861 | 559,826 | 293,930 |
| Gasoline | 134,905 | 19,272 | 332,465 | 47,495 | 2,646,050 | 2,771,927 |
| Kerosene | ..... | ..... | 913 | 130 | 18,714 | 4,888 |
| Exports— | | | | | | |
| Crude oil | 138,627 | 19,804 | 65,412 | 9,345 | 1,795,366 | 1,135,147 |
| Fuel oil | 257,274 | 36,755 | 671,228 | 95,890 | 4,262,407 | 4,429,472 |
| Diesel and gas oil | ..... | ..... | 45,769 | 6,538 | 1,295,384 | 640,584 |
| Gasoline | 236,619 | 33,717 | 295,719 | 42,246 | 3,784,311 | 2,212,567 |
| Kerosene | ..... | ..... | 82,335 | 11,762 | 847,497 | 597,211 |
| Lubricants | ..... | ..... | ..... | ..... | 5,057 | ..... |

**TANKER SHIPMENTS FROM SAN FRANCISCO TO ATLANTIC AND GULF COAST PORTS**

| | | | | | | |
|---|---|---|---|---|---|---|
| Diesel and gas oil | ..... | ..... | ..... | ..... | 88,280 | ..... |
| Gasoline | ..... | ..... | ..... | ..... | 285,245 | 768,245 |
| Coastwise— | | | | | | |
| Fuel oil | 158,688 | 22,670 | 32,379 | 4,626 | 847,559 | 752,554 |
| Diesel and gas oil | 8,929 | 1,276 | ..... | ..... | 82,605 | 182,724 |
| Gasoline | 16,171 | 2,310 | 89,304 | 12,758 | 1,074,055 | 795,218 |
| Kerosene | 2,516 | 359 | ..... | ..... | 96,330 | 29,692 |
| Exports— | | | | | | |
| Crude oil | ..... | ..... | ..... | ..... | 3,075 | 71,453 |
| Fuel oil | 114,060 | 16,294 | ..... | ..... | 236,202 | 168,846 |
| Diesel and gas oil | ..... | ..... | ..... | ..... | 124,540 | 64,338 |
| Gasoline | 92,457 | 13,208 | 52,095 | 7,442 | 929,687 | 1,530,933 |
| Kerosene | ..... | ..... | 28,750 | 4,107 | 162,499 | 103,838 |
| Lubricants | ..... | ..... | ..... | ..... | ..... | 13,693 |

### Elwood Potential

Potential daily production of the prolific Elwood Field was increased from 66,152 to 67,029 bbls. due to the recent completion of new wells by the Barnsdall and Rio Grande. This field was assigned an allowable daily production of 38,218 bbls., with current production approximating 40,680 bbls. when the report was compiled. The Ventura Avenue Field, with a potential daily production of 74,522 bbls., according to the new schedule, was given a new allowable of 42,478 bbls., an increase of 201 bbls. daily over the previous allowable. Seal Beach, including Alamitos Heights, did not show any change in its potential production of 40,000 bbls. daily with the result that the allowable based on a 43 per cent cut remained at the previous finding of 22,800 bbls. daily. This field is still producing slightly in excess of its allowable, as current production early in the week was 24,229 bbls.

The West Front area of the Kern River Field was not disturbed, the potential production and allowable production remainig at 22,143 bbls. and 12,622 bbls. respectively. This field is producing a little in excess of 14,000 bbls. daily at the present time. Mount Poso, with a potential daily production of 23,276 bbls. and a new allowable of 13,267 bbls., is producing less than its quota, current production approximating 11,665 bbls. daily. The Round Mountain Field, with a potential of 10,573 bbls. and a new allowable of 6,027 bbls., is also producing below the prescribed maximum, as daily production of this field only aggregated 3,428 bbls. when the Fact Finding Committee's report was compiled. The Maricopa Flats section of the Midway-Sunset Field is just under the wire with a potential of 29,385 bbls., an allowable of 16,749 bbls. and an actual production of 16,671 bbls. daily.

### Group Potentials

These fields, Santa Fe Springs, Long Beach, Ventura Avenue, Elwood, Seal Beach, Kern Front, Mount Poso, Round Mountain and Maricopa Flats, comprising Group No. 1, have a total potential production of 642,761 bbls., an allowable of 366,374 bbls. and an actual daily production of 381,518 bbls. Group No. 2, consisting of all other fields in the State with the exception of Kettleman Hills, is credited with a potential daily production of 373,621 bbls., an allowable of 223,415 bbls. and an actual production of 218,291 bbls. per day when the report was compiled early this week. Kettleman Hills, which was assigned to a special group designated as No. 3 because of the production and development agreement effected by Secretary of Interior Wilbur, was assigned a potential of 65,000 bbls. daily, an allowable of 13,500 bbls. and a current production of 12,580 bbls. The substantial daily production given Kettleman Hills by the Fact Finding Committee was incorporated in the State schedule despite the fact that the Kettleman Hills agreement precludes resumption of production previous to July 1, 1931. The potential of 65,000 bbls. per day is considered conservative as the 24 wells either standing cemented on top of the pay or shut down in conformity with the Kettleman Hills agreement, would undoubtedly exceed this estimate if permitted to produce. The total potential daily production of California was fixed by the Fact Finding Committee as 1,081,382 bbls., the allowable production, 603,289 bbls. and actual production at 620,000 bbls. daily.

### Kettleman Operations

Drilling operations in the Kettleman Hills Field of Kings County have been getting smaller and smaller from week to week due to the suspension of drilling operations in conformity with the Kettleman Hills agreement, together with the probability that some plan of unit operation or zone development may be worked out. The State failed in its initial attempt to enforce the gas conservation law at Kettleman Hills this week when Superior Judge S. L. Strother granted a temporary delay until April 16. This recess was granted in the hope and on the expectation that conferences on plans for consummation of unit development or co-operative drilling may result in the adoption of a definite plan and obviate the necessity of a prolonged court session. During the period of continuance from April 1 to April 16 operators in this field are virtually put on their honor to make a concerted attempt to curtail, reduce and control the asserted waste of gas from their respective producing wells. The Milham Exploration Co., Continental and Standard Oil companies were charged to take every means possible with the interest of not only themselves but with the public good also in mind, to curtail and control as far as possible the waste of gas from their producing wells. Although Judge Strother did not specifically include No. 1 Felix of the Petroleum Securities Co. in his order, it was his intention that all interests would co-operate in the reduction of gas production.

The first day of the hearing, April 1, was taken up with routine matters and ended with the attorneys arguing over the proposal of Judge Strother that operators agree to get together on some plan of curtailing their production during a continuance which the court was considering. At the beginning of the second day operators proposed that the court should appoint a committee to make an investigation of the four wells producing with a view to handling the gas situation. Judge Strother held, however, that "the court will not appoint a commission believing that the best results can be gained by the operators themselves. They are certainly able to make the best adjustments for themselves and the public in general if they are willing to sacrifice their own interest for the

# PURE OIL PIPE CO. LINE RESUMES TAKING MOUNT PLEASANT OUTPUT

By Special Correspondent

MUSKEGON, Mich., Apr. 5.—General optimism returned to the ranks of operators in central Michigan as the Pure Oil Co. resumed taking the capacity output of all producers in the Mount Pleasant Field, a number of wells which had been shut down at the Dundee casing point were drilled in as good producers and an important wildcat northwest of the field near Clare was completed.

The Pure Oil Co., operators of the only pipe line system, resumed taking 100 per cent production, or about 8,000 bbls. a day. Oil which had been run into storage for several weeks will not be shipped immediately but present capacity output will be accepted.

Five new producers, four of which had been shut down at the Dundee casing point, were drilled into the pay sands with the result that 725 bbls. of initial production was added.

Although somewhat of a disappointment in size, H. E. Pollock's No. 1 Anna Bowman wildcat, SE NE, Section 27-16n-4w, Vernon Township, Isabella County, about 5 miles south of the village of Clare, is making about 75 bbls. a day by heads at 4 feet in the Dundee. It is now 3,724 feet deep, and has a strong flow of gas which flows the oil by heads.

The largest of the new producers was the Stork Oil Co., or Stilgenbauer's No. 6 Coon, NE NE, Section 12-14n-3w, Chippewa Township, Isabella County, which made 400 bbls. initial. Dundee was topped at 3,505 feet and total depth 3,548 feet.

The Pure Oil Co.'s No. 2 Gibbs-Gordon, NW NW, Section 7-14n-2w, Greendale Township, Midland County, was completed at 3,595 feet with an initial production of 110 bbls. Gibbs-Gordon's No. 1 on the same lease, NW NW, Section 7-14n-2w, made 90 bbls. at a total depth of 3,586 feet.

The Pure Oil Co.'s No. 1 John R. Veit, NW SE, Section 11-14n-3w, Chippewa Township, at a total depth of 3,605 feet made 70 bbls. initial.

The Leonard Petroleum Co.'s No. 2 Frank Ayris, SE NW, Section 11-14n-3w, also Chippewa Township, made only 55 bbls. initial at 3,589-3,607 feet.

### Central Michigan Wildcats

Two wildcats near the Mount Pleasant Field, one in Isabella Township, Isabella County, and the other in Washington Township, Gratiot County, were reported dry and abandoned in the Dundee.

One was drilled by the Mellon-Pollock-Wittmer interests of Pittsburgh, Pa., who brought in the successful wildcat near Clare. The other was drilled by E. O. Pequignot, an independent operator. The first was H. E. Pollock's No. 1 Zingery, SW SW, Section 25-15n-4w, Isabella Township, Isabella County. Dundee was topped at 3,703 feet and it was dry and abandoned at 3,788 feet. E. O. Pequignot's No. 1 A. Nass, NE SE, Section 10-9n-2w, Washington Township, Gratiot County, southeast of the proven field, was dry and abandoned at 3,043 feet.

Interested with H. E. Pollock in wildcat developments in central Michigan near the Mount Pleasant Field are the

(Continued on Page 152)

# PATRICK CARBON
## FOR DIAMOND CORE DRILLING

## *Economy in Structural Core Drilling*

STRUCTURAL Core Drilling and production drilling are very different in operation, purpose and equipment.

The objective of structural core drilling is to obtain accurate cross-sections of the ground penetrated, and it is important that the cutting agent produce maximum core recovery under *all* conditions. It is likewise essential that small holes be drilled, or the cost involved will be the same as that of wild-catting. In the interest of economy, light equipment is desirable—lighter drills and better cutting materials. This increases portability, decreases upkeep and replacement expense, lowers operating costs.

Smaller holes present difficulties not met with in production drilling. The same bits cannot be used, but a freer and easier cutting agent is required. To obtain maximum results at minimum costs, it is important that Diamonds be used throughout the extent of strata from which core is desired. In medium hard to very hard ground, actual tests have demonstrated that Diamonds will core two to fifty times faster than any other material and yet cost less, apart from the saving in time and wear on equipment. They reduce to a minimum the weight and power of drill equipment required, and still secure highest efficiency in operation.

The value of Carbons is solely the work they will do, compared with other materials. The Diamond Core Drill is designed to operate most efficiently and economically with Diamonds as the cutting agent. They avoid over-taxing the strength of the equipment, which in reality is limited by the size of the hole drilled.

With Black Diamonds, the Driller knows he will not be delayed by sudden changes in formation, or by frequent twist-offs and breakdowns. Because they cut so smoothly and freely, they obtain with light drills lowest structural drilling costs. There is no gain in using heavier equipment than is needed or in spending more money on structural drilling than is required.

To drillers interested in reducing their expenses and increasing the efficiency of their operations, the Patrick Organization will gladly make available, without obligation, the benefit of data on drilling economy accumulated from actual drilling all over the world. The drilling value inherent in Patrick Carbon is the product of this practical background. It has meant lower costs to many drillers.

*Send today for Patrick's booklet, "Diamond Core Drilling in Oil Field Practice." It is based on actual drilling experience. It is sent free upon request.*

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**SELLWOOD BUILDING**
**DULUTH, MINNESOTA, U.S.A.**
**CABLE ADDRESS "EXPLORING" DULUTH**

public good. The court is relying on their sense of fairness in the matter."

**Public Interest Paramount**

The Continental Co. has already restricted its production in this area and other operators have either already undertaken similar work or are studying the situation as to the best method to pursue. Particular attention is directed to Judge Strother's advice to Kettleman operators as outlined above and specifically to that portion which refers to the public good. It is interesting to note in this connection that Judge Hazlett in handling the gas conservation law at Santa Fe Springs, likewise subjugated private interests to public welfare. There has been a growing tendency during the past decade to recognize the public welfare as taking preference over the rights of individuals in matters of this kind and it is quite probable that this precedent will form a basic bulwark against any concerted attack.

The Bolsa Chica Oil Co. has successfully completed its No. 1 Ferguson in Section 24-22-17 and the Department of Interior has issued the company the customary certificate of compliance asserting that all requirements under the oil land leasing law have been fulfilled to the satisfaction of the department. This well, located on a 1,840-acre parcel in the north dome of the Kettleman Hills Field, will not be put on actual production in accordance with the Kettleman agreement until July 1, 1931, unless conditions arise that automatically abrogate the agreement prior to that time. The Bolsa Chica, although not permitted to bring No. 1 Ferguson into production, is in a position to share in the distribution of a percentage of the proceeds from three wells now on production and from a fourth scheduled for early completion. These four wells, which were permitted to continue on production in compliance with the Kettleman agreement, are the Milham's discovery well, the Continental's No. 1 Elliott and two wells of the Standard, the quartet being direct offsets.

No. 1 Ferguson of the Bolsa Chica, bottomed at 7,694 feet, has cored approximately 175 feet of oil sand and considerable difficulty was experienced in controlling the well when drilling was concluded. In addition to the 1,840 acres in the north dome, the Bolsa Chica holds 1,560 acres in the middle dome where production is also anticipated in the future. The company's holdings in the middle dome are much more favorably located with respect to structure and should consequently prove more valuable if subsequent drilling proves the existence of commercial production similar to that encountered in the north dome.

In order to compensate operators who have completed wells in the north dome and have refrained from producing them in compliance with the Kettleman agreement, a certain portion of the net proceeds from the four wells permitted to produce is distributed among operators who have completed drilling. The Kettleman agreement provides that not more than 25 per cent or less than 10 per cent of the output of the four wells permitted to produce should be pooled and the proceeds prorated among operators who signed the agreement. The percentage to be set aside for this purpose and the amount to be paid each operator is determined monthly by a committee of geologists and petroleum engineers. During December, 1929, when only 10 per cent of the output was pooled, approximately $95,900 was distributed to operators owning 17 wells which were completed and subsequently shut down. Several operators contended that 10 per cent of the total production from the four wells was not sufficient to compensate for the possible drainage of their properties with the result that in January the committee allotted 25 per cent of the output upon recommendation of Stanley Herold, named by Secretary of Interior as umpire. The allottment to be distributed based on February production has not yet been announced due to the fact that some of the parties to the agreement contend that a percentage of the gas sales should also go into the compensation fund, whereas up to the present only a percentage of the oil production has been pooled. Only those operators who have received certificates of compliance which stipulate the discovery of oil are eligible to share in the distribution of the compensation fund.

**Santa Fe Springs**

The Santa Fe Springs Field of Los Angeles basin was visited by another oil and gas fire during the past week when the Bandini Petroleum Co.'s No. 14 Off blew out a valve and subsequently took fire. This well was flowing 425 bbls. of 32.2 gravity oil from the Clarke zone at 8,002 feet just previous to blowing out. The Bandini's field department was beaning in the well to conform with the recent court order which contemplated a drastic reduction in the production of natural gas. The well was producing approximately 4,000,000 feet a day, whereas the maximum prescribed by the gas conservation law was set at 600,000 feet. The gas pressure which built up proved too high for the fittings to sustain with the result that the valve welding broke and the well started its rampage. It was subsequently brought under control several days later and capped with stronger fittings.

None of the various completions chalked up in this field during the past week registered substantial production. The General Petroleum headed the list by bringing in four wells which showed an aggregate initial daily production of 1,553 bbls. No. 160-A Santa Fe was the company's best completion as this well registered an initial of 654 bbls. upon recompletion after being redrilled and deepened to 5,970 feet. No. 160-D bottomed at 5,980 feet tanked 550 bbls. during the first 24 hours following completion. Both of these wells showed a cut of approximately 20 per cent. No. 177-F, a new well finished in the Clarke zone at 7,336 feet, was good for 275 bbls., the oil testing 33.1 degrees A.P.I. No. 207 Santa Fe, a former upper zone producer, proved a distinct disappointment upon recompletion in the Clarke zone at 7,763 feet as it only showed an initial of 74 bbls. daily.

The Elmer Oil Co. recompleted No. 2 Springs early in the week and this well was returned to production flowing 298 bbls. of 33.1 gravity oil from the O'Connell zone at 6,500 feet, the hole having been finished with a 4¾-inch oil string landed at 6,404 feet. The Bellview Oil Syndicate finished No. 4 Grohs, a new well in the Clarke zone, during the week and this project, bottomed at 7,363 feet and finished with a 6⅝-inch liner carrying 991 feet of perforated, was good for 780 bbls. of 32.4 gravity oil daily. The Standard's contribution to the field's list of producers was No. 29 South Whittier Community, a new well which was brought in flowing 440 bbls. daily from 7,950 feet, the hole having been finished with a 6⅝-inch liner carrying 460 feet of perforated. The Star Petroleum Co. finished the best well completed during the week when No. 3 Springs was recompleted after being redrilled and deepened to the O'Connell zone at 6,846 feet, from which depth it registered an initial of 1,650 bbls. daily.

**Long Beach**

Drilling operations in the Long Beach Field resulted in the completion of eight wells during the past week and a check indicates the probable completion of several more in the near future. The largest well finished was E. B. Campbell's No. 4 Signal, which registered an initial daily production of 1,192 bbls. of clean 29.4 gravity oil upon recompletion at

(Continued on Page 152)

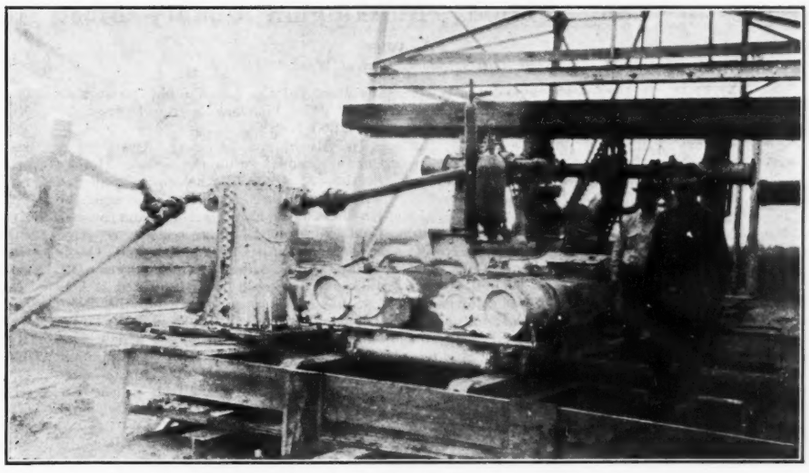
**IMPORTANT NORTHERN CALIFORNIA WILDCATS**

| Company, well and location— | S.T.R. | Depth | Status |
|---|---|---|---|
| Union, No. 1 Buel Canyon, Santa Barbara Co. | X- 7-31 | 4,160 | hd. sd. drilling |
| Tannehill, L. B., No. 1 Los Olivas, Santa Barbara Co. | 23- 7-31 | 4,395 | suspended |
| Standard, No. 1 Point Conception, Santa Barbara Co. | X- 5-34 | 4,380 | set pipe |
| Universal Consd., No. 1 Pt. Conception, Santa Barbara Co. | 30- 5-34 | 106 | sd. drilling |
| Ohio Oil Co., No. 1 Lompoc, Santa Barbara Co. | 2- 6-34 | 3,300 | sd. sh. drilling |
| Prairie Oil Co., No. 1 Lompoc, Santa Barbara Co. | 15- 7-35 | 1,708 | br. sh. drilling |
| Fields Gasoline Co., No. 1 Santa Maria, Santa Barbara Co. | 8- 9-33 | 915 | hd. sd. drilling |
| Barnsdall, No. 1 Gato Ridge, Santa Barbara Co. | 9- 8-32 | mtl. | building rig |
| Vaqueros Oil Co., No. 1 Union, Santa Barbara Co. | 5- 7-30 | .... | grading |
| Carey, A., No. 1 Goleta, Santa Barbara Co. | 1- 4-28 | 2,880 | cleaning out |
| General Pet., No. 1 Goleta, Santa Barbara Co. | 21- 4-28 | 4,533 | shut in |
| General Pet., No. 2 Goleta, Santa Barbara Co. | 21- 4-28 | 4,350 | shut in |
| General Pet., No. 136 Goleta, Santa Barbara Co. | 21- 4-28 | 1,016 | suspended |
| General Pet., No. 138 Goleta, Santa Barbara Co. | 21- 4-28 | 2,975 | sd. sh. drilling |
| General Pet., No. 137 Goleta, Santa Barbara Co. | 21- 4-28 | 1,026 | suspended |
| General Pet., No. 139 Goleta, Santa Barbara Co. | 21- 4-28 | 1,035 | suspended |
| General Pet., No. 143 Goleta, Santa Barbara Co. | 21- 4-28 | 1,040 | suspended |
| Boles Oil Co., No. 140 Goleta, Santa Barbara Co. | 22- 4-28 | 50 | suspended |
| U. S. Pet., No. 141 Goleta, Santa Barbara Co. | 20- 4-28 | 1,035 | suspended |
| U. S. Pet., No. 142 Goleta, Santa Barbara Co. | 20- 4-28 | 1,032 | suspended |
| U. S. Pet., No. 143 Goleta, Santa Barbara Co. | 20- 4-28 | 1,019 | suspended |
| Macmillan Pet., No. 134 Goleta, Santa Barbara Co. | 21- 4-28 | 175 | suspended |
| Bolsa Chica, No. 191 Goleta, Santa Barbara Co. | 24- 4-29 | mtl. | building pier |
| Caldwell Brown, No. 159 Goleta, Santa Barbara Co. | 24- 4-29 | 25 | suspended |
| El Camino Oil, No. 149 Goleta Tideland, Santa Barbara Co. | 22- 4-28 | 40 | suspended |
| Standard, No. 2 Goleta, Santa Barbara Co. | X- 4-30 | 3,388 | br. sh. drilling |
| Frazer & Oliver, No. 173 Capitan, Santa Barbara Co. | 4- 4-30 | 101 | suspended |
| McLaine, W. L., No. 175 Capitan, Santa Barbara Co. | 4- 4-30 | 30 | suspended |
| Durkee, R. S., No. 176 Capitan, Santa Barbara Co. | 4- 4-30 | 30 | suspended |
| Cunningham, W., No. 177 Capitan, Santa Barbara Co. | 4- 4-30 | 30 | suspended |
| Oakburn Oil Co., No. 168 Capitan, Santa Barbara Co. | 4- 4-30 | 370 | suspended |
| Oakburn Oil Co., No. 169 Capitan, Santa Barbara Co. | 4- 4-30 | 200 | suspended |
| Oakburn Oil Co., No. 170 Capitan, Santa Barbara Co. | 4- 4-30 | 1,302 | shut in |
| Oakburn Oil Co., No. 171 Capitan, Santa Barbara Co. | 4- 4-30 | 300 | suspended |
| Oakburn Oil Co., No. 172 Capitan, Santa Barbara Co. | 4- 4-30 | 325 | suspended |
| Indian Pet., No. 174 Capitan, Santa Barbara Co. | 4- 4-30 | 230 | suspended |
| Shell, No. 1 Orella, Santa Barbara Co. | 1- 4-31 | 2,000 | gr. sd. drilling |
| Wildcat Oil Co., No. 1 Santa Maria, Santa Barbara Co. | 20-10-35 | 4,260 | suspended |
| Pacific Western, No. 1 Gibraltar, Santa Barbara Co. | 14- 5-27 | 2,345 | suspended |
| Shell, No. 1 Summerland, Santa Barbara Co. | 18- 4-25 | 2,380 | br. sh. drilling |
| Standard, No. 1 Casitas, Santa Barbara Co. | 26- 4-25 | 1,700 | hd. sd. drilling |
| Continental, No. 1 Carpinteria, Santa Barbara Co. | 33- 4-25 | 4,130 | gas well—idle |
| Continental, Tideland permit No. 121, Santa Barbara Co. | 33- 4-25 | 55 | suspended |
| Continental, Tideland permit No. 122, Santa Barbara Co. | 33- 4-25 | 158 | suspended |
| Continental, Tideland permit No. 123, Santa Barbara Co. | 33- 4-25 | 125 | suspended |
| Continental, Tideland permit No. 124, Santa Barbara Co. | 33- 4-25 | 2,850 | deep test |
| Continental, Tideland permit No. 124-A, Santa Barbara Co. | 33- 4-25 | 418 | suspended |
| Continental, Tideland permit No. 125, Santa Barbara Co. | 33- 4-25 | 120 | suspended |
| Continental, Tideland permit No. 126, Santa Barbara Co. | 33- 4-25 | 200 | suspended |
| Continental, Tideland permit No. 127, Santa Barbara Co. | 33- 4-25 | 145 | suspended |
| Continental, Tideland permit No. 128, Santa Barbara Co. | 33- 4-25 | 98 | suspended |
| Continental, Tideland permit No. 129, Santa Barbara Co. | 33- 4-25 | 97 | suspended |
| Exeter Oil, Tideland permit No. 163, Santa Barbara Co. | 32- 4-25 | 76 | sd. drilling |
| Getty, George F., No. 120 Carpinteria, Santa Barbara Co. | 32- 4-25 | 68 | cemented |
| Getty, George F., No. 130 Carpinteria, Santa Barbara Co. | 32- 4-25 | 55 | cemented |
| Shell, No. 5 Oxnard, Ventura Co. | 36- 2-22 | mtl. | building rig |
| Standard, No. 5-9 Saticoy, Ventura Co. | 10- 2-22 | 8,529 | cleaning out |
| Prairie Oil & Gas, No. 1 Ventura, Ventura Co. | 30- 3-22 | 4,457 | cleaning out |
| Bolsa Chica, No. 1-A Temescal, Ventura Co. | 4- 4-18 | 2,010 | br. sh. drilling |
| Fennell, E. A., No. 1 Lankershim, Ventura Co. | 13- 4-19 | 1,460 | cleaning out |
| General Pet., No. 1 Fillmore, Ventura Co. | 6- 3-19 | rig | rigging up |
| Associated, No. 1 Rincon Creek, Ventura Co. | 19- 4-24 | 1,550 | hd. sd. drilling |
| Calleguas Synd., No. 1 Camarillo, Ventura Co. | 6- 1-20 | 218 | sd. drilling |
| Milham Explt'n., No. 9 Buttonwillow, Kern Co. | 8- 28-23 | 4,990 | fishing |
| General Pet., No. 1 Buttonwillow, Kern Co. | 6-28-23 | 1,930 | hd. sd. drilling |
| Nordon Exp. Co., No. 1 Buttonwillow, Kern Co. | 7-29-24 | 135 | suspended |
| Shell, No. 1 Weed Patch, Kern Co. | 29-30-29 | 2,650 | gr. sd. drilling |
| Shell, No. 1 Edison, Kern Co. | 33-29-29 | 3,620 | hd. sd. drilling |
| Symark Oil Co., No. 1 Edison, Kern Co. | 24-29-29 | 2,130 | suspended |
| Sayre, F. M., No. 1 Edison, Kern Co. | 5-30-29 | 4,220 | fishing |
| Helen Pet., No. 1 Jasmine, Kern Co. | 23-25-27 | 1,687 | gr. sd. drilling |
| Moran & DeCamp, No. 1 Mojave, Kern Co. | 26-10-14 | 316 | hd. sd. drilling |
| Bardeen, H. A., No. 1 San Emidio, Kern Co. | 18-10-23 | 515 | br. sh. drilling |
| Bardeen, H. A., No. San Emidio, Kern Co. | 10-10-23 | 480 | sd. sh. drilling |
| Currency Pet. Co., No. 1 Jacalitos, Fresno Co. | 28-21-14 | 3,680 | cleaning out |
| Petroleum Securities, No. 2 Huron, Fresno Co. | 28-20-16 | 7,390 | suspended |
| Fresno Madera Oil Co., No. 1 Clovis, Fresno Co. | 18-12-21 | 4,290 | resumed work |
| Rio Grande, No. 1 Kerman, Fresno Co. | 35-13-16 | mtl. | building rig |
| Western Gulf, No. 1 Penoche Valley, Fresno Co. | 26-15-12 | 4,177 | sd. sh. drilling |
| Midwest Refining Co., No. 1 Huasna, San Luis Obispo Co. | 34-31-15 | 3,905 | cleaning out |
| Panorama Oil Co., Well No. 1, San Luis Obispo Co. | 7-31-21 | 4,019 | fishing |
| Paso Robles Synd., No. 1 Creston, San Luis Obispo Co. | 27-27-11 | 3,810 | br. sh. drilling |
| Union, No. 1 King City, Monterey Co. | 8-22- 8 | 3,070 | br. sh. drilling |
| Standard, No. 1 King City, Monterey Co. | 23-22- 7 | 3,860 | hd. sd. drilling |
| Pacific Inland Oil Co., No. 1 Parkfield, Monterey Co. | 19-23-15 | 781 | cleaning out |
| O'Donnell, J. E., No. 1 Dudley Ridge, Kings Co. | 7-23-20 | 3,000 | sd. sh. drilling |
| Penn Western, No. 1 Tulare Lake, Kings Co. | 24-21-18 | 1,338 | suspended |
| Wellport Oil Co., No. 1 Devils Den, Kings Co. | 9-24-17 | 3,390 | sd. sh. drilling |
| Oceanside Oil Co., No. 1 Kreyenhagen, Kings Co. | 32-22-16 | 300 | cleaning out |
| Twin State Oil Co., No. 1 Point Arena, Mendocino Co. | 14-12-17 | 2,600 | hd. sd. drilling |
| Barnhart Trust, No. 1 Oakdale, San Joaquin Co. | 3- 2-10 | 2,730 | hd. sd. drilling |
| White, Roy, No. 1 Pixley, Tulare Co. | 8-23-26 | 4,020 | suspended |
| Terminal Oil Co., No. 1 Tulare, Tulare Co. | 29-20-25 | 4,198 | suspended |
| Terra Bella Oil Co., No. 1 Porterville, Tulare Co. | 35-22-27 | 900 | cleaning out |
| Getty, George F., No. 1 Chowchilla, Madera Co. | 8-10-14 | 3,475 | hd. sd. drilling |

**IMPORTANT SOUTHERN CALIFORNIA WILDCATS**

| | | | |
|---|---|---|---|
| Simmel, L. G., No. 1 Inglewood, Los Angeles Co. | 21- 2-14 | 5,380 | suspended |
| Raleigh Oil Co., No. 1 Malibu, Los Angeles Co. | 1- 2-19 | 3,880 | suspended |
| Clearwater Oil Co., No. 1 Bellflower, Los Angeles Co. | 21- 3-12 | 5,150 | suspended |
| Getty, George F., No. 1 Riviera, Los Angeles Co. | 27- 2-12 | 4,975 | hd. sd. drilling |
| Burlingham, Pet., No. 1 Compton, Los Angeles Co. | 17- 3-13 | 2,680 | suspended |
| Diller, W., No. 1 Watts, Los Angeles Co. | 8- 3-17 | 5,450 | sd. sh. drilling |
| Crimson Pet., No. 1 Compton, Los Angeles Co. | 22- 3-13 | rig | suspended |
| Ohio, No. 1 Moneta, Los Angeles Co. | 35- 3-14 | 2,740 | sd. sh. drilling |
| Cal. Ventura Oil Co., No. 1 Manhattan, Los Angeles Co. | 30- 3-14 | 5,820 | br. sh. drilling |
| Archer Oil Co., No. 1 Watson, Los Angeles Co. | 17- 4-13 | 5,557 | suspended |
| Shell, No. 1 Van Nuys, Los Angeles Co. | 19- 2-15 | 1,080 | cleaning out |
| Anchor Oil Co., No. 1 Puente, Los Angeles Co. | 19- 2-10 | 4,820 | suspended |
| Rucker, R. C., No. 1 Puente, Los Angeles Co. | 27- 2-10 | 3,650 | reaming |
| Sherman, J. W., No. 1 Puente, Los Angeles Co. | 33- 2- 8 | 850 | suspended |
| Keck & Hall, No. 1 Puente, Los Angeles Co. | 32- 2- 8 | 1,120 | gas well |
| Marcel Pet. Co., No. 1 Puente, Los Angeles Co. | 31- 2- 8 | 1,660 | cleaning out |
| Richfield Oil Co., No. 1 Puente, Los Angeles Co. | 34- 1-10 | .... | location |
| Los Gatos Oil Co., No. 1 El Monte, Los Angeles Co. | 16- 1-11 | 1,950 | cleaning out |
| Olympic Corp., No. 1 Calabasas, Los Angeles Co. | 18- 1-17 | 2,607 | set pipe |
| Martin, J. W., No. 1 Newhall, Los Angeles Co. | 22- 1-17 | 1,290 | suspended |
| Consolidated Oil Co., No. 1 Newhall, Los Angeles Co. | 8- 3-16 | 1,555 | cleaning out |
| National Sec., No. 1 Newhall, Los Angeles Co. | 1- 3-16 | 874 | suspended |
| Anderson, P. B., No. 1 Hasley Canyon, Los Angeles Co. | 1- 3-16 | 900 | suspended |
| Pioneer Pet., No. 1 Newhall, Los Angeles Co. | 14- 3-16 | 2,400 | sd. sh. drilling |
| Union, No. 1 Coyote, Sansinena, Los Angeles Co. | 30- 2-10 | 2,775 | oil sand; drlg. |
| Beard, G. F., No. 1 Brea Canyon, Los Angeles Co. | 30- 2- 9 | 1,099 | suspended |
| Western Gulf, No. 1 Brea Canyon, Los Angeles Co. | 28- 2- 9 | 3,960 | br. sh. drilling |
| Standard, No. 1 Bastanchury, Coyote, Orange Co. | 21- 3-10 | 4,990 | sd. sh. drilling |
| Graham & Loftus, No. 1 Coyote, Orange Co. | 18- 3- 9 | 1,945 | sd. sh. drilling |
| Union Oil Co., No. 1 Richfield, Orange Co. | 13- 3- 9 | 3,850 | diabase; drlg. |
| Mesa Pet., No. 1 Newport, Orange Co. | 21- 6-10 | 4,910 | suspended |
| Hall, H. L., No. 1 Newport, Orange Co. | 20- 6-10 | .... | location |
| Fidelity Pet. Co., No. 1-A Murrietta, Riverside Co. | 23- 7- 3 | 701 | cleaning out |
| Hemet Pet. Co., No. 1 Ward, Riverside Co. | 9- 5- 1 | 3,560 | suspended |
| Imperial Valley Oil Co., Well No. 1, Imperial Co. | 32-11-10 | 2,980 | suspended |
| San Marcos Oil Co., Well No. 1, San Diego Co. | 9-12- 3 | rig | suspended |
| Turner, S. S., No. 1 Escondido, San Diego Co. | 25-12- 2 | 2,170 | suspended |
| McGregor Synd., No. 1 Del Mar, San Diego Co. | 17-14- 3 | 1,255 | sd. sh. drilling |
| Borderland Oil Co., No. 1 Encinitas, San Diego Co. | 12-13- 4 | 2,200 | sd. sh. drilling |
| Borderland Oil Co., No. 1 Point Loma, San Diego Co. | 30-16- 3 | 550 | cleaning out |
| Grey, H. H., No. 1 Redlands, San Bernardino Co. | 25- 1- 2 | 2,525 | fishing |
| Duncan, N. I., No. 1 Mohave, San Bernardino Co. | 8- 4- 6 | rig | suspended |
| Girard & Grimes, No. 1 Corona, San Bernardino Co. | 8- 2- 8 | 930 | sd. sh. drilling |

# Separator with IDEAL-AJAX



This Shell Oil Co. hook-up at Oklahoma City shows the new large-capacity AJAX Separator—the latest IDEAL-AJAX equipment.

All the fields are reporting remarkable performance with the New IDEAL-AJAX Roller Bearing equipment.

Made by AJAX IRON WORKS, Corry, Pa.

# IDEAL-AJAX

## ROLLER BEARING

## STEAM DRILLING ENGINES

*Ask the National Supply Company man to tell you about it.*

# Much New Work in Central Ohio Field

## Thirty-One New Locations and Thirty-Six Wells Started, Largest Increase in Long Period. Muskingum County Most Active

By Whit
*Staff Correspondent, Central West Fields*

FINDLAY, Ohio, Apr. 7.—Little was accomplished in the way of completed work in any divisions of the Central West Field, although each division was represented, for the week which was the worst weather experienced during the entire winter season.

In the old Lima Field of northwestern Ohio, Roalman & Pease drilled in a second test in the southwest corner of the C. A. Landes farm, SW, Section 14, Bath Township, Allen County, and northeast of Lima, which pumped an initial of 30 bbls. from the Trenton lime, topped at 1,330 feet and the sand penetrated to a depth of 47 feet, total depth, 1,377 feet. C. A. and F. J. Peavey are drilling No. 3 C. A. Hoover farm, Section 24, same township.

The Recovery Oil & Gas Co.'s test on the J. S. H. Burch farm, SW, Section 17, Butler Township, Mercer County, is a light gas producer. The Home Oil & Gas Co. is drilling a second test on the George Wenning farm, SE, Section 31, same township.

Two new wells have started drilling in Cessna Township, Hardin County, where the Kemrow Co. found a 40-bbl. initial producer a week ago on the Sidney A. Sites farm, Section 14. They are the Geiger Oil Co.'s No. 1 Grant Geiger farm, Section 13, and the Kemrow Co.'s No. 1 O. J. Crawford, Section 15, same township. Roundhead Oil & Gas Co. is drilling No. 8 Erwin Hites farm, in McDonald Township, same county.

C. Tester and others are starting a test on the Gus Kohler farm, Section 36, Moulton Township, Auglaize County, and unknown parties are drilling on the Catherine Easterday farm, Section 10, Noble Township, same county.

Ben Heilers is drilling a second test on his own farm, Section 15, Cynthian Township, Shelby County.

### CENTRAL OHIO

While but 16 completions were made in the Central Ohio Field for the week, of which 4 were producers with an initial of 530 bbls., 6 dry holes and 6 gas wells, the big production comes from the Clay Township area of Muskingum County, accounting for 500 bbls. initial, and one of the rich spots of the state at this time. New work is springing up at a lively rate as the week's review shows 31 new locations and 36 wells started downward, a total of 67, the largest increase in new work recorded for a long period.

In Ashland County but one completion was reported, being the Ohio Fuel Gas Co.'s No. 1-5,020 C. B. Heifner farm, Lots 44 and 45, Sullivan Township. In Greene Township, the same company made a location for No. 1-5,089 C. H. Eichelberger farm. In Perry Township, Stewart and others are drilling a second test on the F. P. Myers, Section 29, and Crownshield and others are drilling No. 4 Martie Wheeler farm, Section 28. In Vermillion Township, the Ohio Fuel Gas Co. made locations for No. 1-5,090 T. J. Culver, Section 13 and No. 1-5,091 D. R. Harlan, Section 20. Robinson and others are drilling No. 4 John R. Smith, Section 9, Lake Township.

In Lorain County, Ridgeville Township, William Dempsey drilled a dry hole on the Joseph Snyder, Lot 32, from 2,423-33 feet. L. T. McGraff made a location on the Margaret Moore, Lot 41, same township. In Carlisle Township, the Ohio Fuel Gas Co. made locations for No. 5-5,092 Julia A. Clark, Lot 13; No. 1-5,094 Frank Rahl, Lot 5; and No. 1-5,093 W. P. Penfound, same lot. Wiser Oil Co. made a location on the W. A. Sayles, same lot, and McMillen and others are drilling on the Eliza Price, Lot 21. Ohio Fuel Gas Co. has an exceptionally fine gas well in No. 1-5,024 on the Gezo Szabo, Lot 14, same township.

#### Wayne County

In Wayne County, Congress Township, the Ohio Fuel Gas Co. is drilling No. 1-5,068 Glenn Fuhrman, Section 12, and made a location for No. 1-5,096 George Wohlgenmuth, Section 32, same township. Same company made a location for No. 1-5,095 John Begley, Section 18, Chester Township.

In Holmes County, Richland Township, the Ohio Fuel Gas Co. is drilling No. 1-4,917 Alonzo McFadden, Section 6.

In Ashtabula County, Rome Township, the Ohio Fuel Gas Co. has a dry hole in No. 1-4,978 C. E. Chester, Lot 34, and its No. 1-4,997 George W. Kelsey, Section 19, Sheffield Township, is making a nice gas showing, and also made a location for No. 1-5,087 Dr. Lee C. Graber farm, Section 5, in Cuyahoga County. F. A. Brendall and others' test on the S. and M. Kozman, Lot 41, Colebrook Township, Ashtabula County, is reported dry in the Clinton at 3,642 feet.

In Knox County, Brown Township, the Upham Gas Co. has a good gas well in No. 3 on the J. T. Workman, Section 8. The Pure Oil Co.'s No. 5 W. D. Heaton farm, Section 20, Union Township. Ohio Fuel Gas Co. made a location for No. 1-5,101 E. L. Staats, Section 5, Jefferson Township.

In Coshocton County, Perry Township, the Ohio Fuel Gas Co. is drilling No. 1-5,022 Grace McCamment, Section 16.

In Licking County, Perry Township, the Pure Oil Co. has a 5-bbl. pumper in No. 6 John Hoover, Section 1, from 2,-860-2,900 feet.

In Muskingum County, Crawley & Carr's second test on the Nelson McCoy, Section 3, Clay Township, is reported with an initial of 300 bbls., and the Kachelmacher Estate's No. 1 on the Elk Coal Co. property, same section, reported at 200 bbls. initial. The Pure Oil Co. is drilling No. 1 Albert Holman, Section 12, Jackson Township. Wittmer Oil & Gas Co. has a fine gas well on the John Thomas Heirs, Section 15, Perry Township, in the Clinton lime which was topped at 3,886 feet and pay sand from 3,922-38 feet. Ohio Fuel Gas Co. made a location for a second test on the Edward P. Allen, in the third quarter, same section.

In Athens County, Ames Township, the Ohio Fuel Gas Co. is drilling No. 3-5,014 F. J. Beasley, Section 16. Townsend Oil & Gas Co. is drilling No. 9 Isaac Castle, Section 30, Alexander Township.

#### Meigs County

In Meigs County numerous new wells are starting drilling and others are locations. In Sutton Township, Tyree and others are drilling No. 1 J. E. Stobart, Section 12. Smith & Watterson have a location for No. 1 Charles Salzer, Section 11. Koots and others are starting a second test on the Mary J. Beegle, Section 10, and the South Ohio Petroleum Co. is drilling No. 2 on State of Ohio land, Section 26, all in Sutton Township. In Rutland Township, the Ohio Fuel Gas Co. is drilling No. 2-5,073 J. W. Carr, Lots 18-24; No. 1-5,005 John C. Clay, Lot 35, and No. 1-5,003 C. C. Bowman, Lot 4. Same company made locations for No. 1 Lee Nelson, Lots 16-22; and No. 1-5,084 D. T. Cuckler, Lot 36. McTaggart and others are drilling No. 1 Minnie J. Chase, Lots 23-24. Chase and others made a location on the F. L. McKnight, Lot 2. Kiggins and others are drilling No. 1 J. H. Musser, Lot 18 and No. 1 E. G. Reed, Lot 19, Rutland Township. In Bedford Township, Ohio Fuel Gas Co. is drilling No. 2-5,059 W. J. B. Carlton, Lot 32, and made a location for No. 1-5,102 Mary A. Douglass, fractional Lot 12. In Salisbury Township, Dr. Gribble and others are drilling on the Mattie Lyman Estate, Section 35. Scipio Township, same county, is in for a nice play by the new work starting. The Ohio Fuel Gas Co. is drilling No. 7-5,054 George W. Clark, Lot 7, and No. 2-5,056 Flora T. Lee, Lot 13. Same company made location in this township for No. 2-5,051 Alva M. Gilkey, Lot 13; No. 1-5,052 M. F. French, same lot; No. 1-5,053 F. R. Alkire, Lot 14; No. 1-5,055 Martin Chase, and No. 1-5,013 N. A. Dye.

In Jackson County, Washington Township, the Ohio Fuel Gas Co. made a location for No. 1-5,099 Mary S. Long, Section 16, also for No. 2-5,070 Scott Alshire, Lot 35, Lick Township, and for No. 1-5,069 R. L. Channell, Lot 10, Coal Township.

#### Vinton County

In Vinton County, Knox Township, N. C. Farmer and others have a fair gas well in No. 31 J. and L. Stanley, Section 5, and the Co-operative Oil Co. made a location o the C. N. Triode and others, Section 5. In Brown Township, I. C. Robinson is drilling on the Lewis O. Draper, fractional Section 12. Wittmer Oil & Gas Co. is drilling on the Charlotte Rennels, Section 35, Swan Township, and the Ohio Fuel Gas Co. is drilling No. 2-5,059 Ilber E. Fri, Section 33, same township.

In Lawrence County, Perry Township, the Inland Gas Corp. is drilling No. 7 on the Hecla Iron & Mining Co. property, Section 23.

In Tuscarwas County, Oxford Township, T. Lynch is starting a second test on the Reuben T. McKee, Lot 21. Gordon Oil Co. is drilling a lot on the Martha Carroll, Lot 32, Washington Township, same county.

#### Stark County

In Stark County, Lawrence Township, F. A. Brendall and others found a nice gas well in No. 3 John Neidert, Section 3, from 3,909-29 feet. Kime and others are drilling on the Brookside Country Club grounds in Section 2, Perry Township, same county.

In Guernsey County, East Ohio Gas Co. is drilling a second test on the John A. Baird, Section 11, Wheeling Township. J. T. Watson and others are drilling on the W. G. Walters, Section 22, Liberty Township.

In Belmont County, C. D. Crouch and others' test on the Albert and Myra Negus, Section 8, Colerain Township, is dry in the Berea sand from 1,978-2,020 feet.

In Morgan County, Patterson Oil Co.'s No. 26 W. I. Thompson, Section 12, Union Township, reported good for 5 bbls. from the Cow Run sand from 202-212 feet, total depth, 225 feet. Ohio Fuel Gas Co. got a light gas well in No. 1-4,997 E. A. Gladden, Section 16, Penn Township, in the lower Berea sand from 1,398-1,415 feet, total depth 1,423 feet. Bode and others are drilling No. 37 Hiram K. Croy, Section 31, Marion Township.

### INDIANA

Only two completions were reported from the Indiana fields, although a number of wells are due for completions in

(Continued on Page 145)

## NIAGARA FIELD, HENDERSON COUNTY, HAS MOST KENTUCKY COMPLETIONS

By Whit
*Staff Correspondent, Kentucky-Tennessee*

OWENSBORO, Ky., Apr. 7.—The Niagara Field in Henderson County was the sensational spot of Kentucky since the last review and completed more new wells than all other fields combined in Kentucky. The Niagara wells are not as large as those found in Ohio and Daviess Counties, but they are good substantial producers and are said to hold up in excellent shape. This field has had a few completions during the past couple of years but now that there is a pipe line to take care of the production work is being rushed and many of the large operating concerns have interests in the new field.

Numerous tests over various counties in the western part of Kentucky are planned and work will start when weather conditions improve so material can be hauled over the country roads.

#### Henderson County

Loman & Daly's No. 1 on the Charles Golday farm, in the Niagara Field of Henderson County, is reported around 30 bbls. initial.

Wittmer Oil & Gas Co. is pushing development work in the Niagara Field. This company's Nos. 2 and 3 on the J. B. Crosby farm, produced initially 10 and 15 bbls.

Thomas Wittmer is also doing a lot of development work with very good success. His Nos. 2 and 3 J. C. Wallace farm are 15 bbls. each, the oil being found close around 700 feet. Same party drilled in Nos. 3 and 4 C. M. Gish farm for 40 and 45 bbls. respectively.

Niagara Oil & Gas Co.'s No. 3 G. B. Jeter farm, reported at 35 bbls. initial, with No. 4 drilling.

Southern Oil Producing Co.'s Nos. 2, 3 and 4 J. E. Farley farm, northeast of the town of Niagara, produced initially 15, 10 and 15 bbls.

O. B. Clark's No. 1 on the Niagara School lot, produced an initial of 40 bbls.

John B. Lyddane's Nos. 2 and 3 on the G. M. Gish 200-acre farm, produced 40 bbls. each, initially.

Perry E. Tichenor's Nos. 2 and 3 J. E. Knight farm, one-fourth mile west of the town of Niagara, produced 30 and 40 bbls. initially. He is drilling No. 1 on the Lee Bushy farm, as well as No. 4 on the J. E. Knight.

Brenner & Adams are drilling No. 1 on the Judson Williams farm. K. M. Dole and others are drilling No. 1 Joe Walden farm. Johnson Oil & Refining Co. reported drilling on the north side of what is known as the Spottsville Dome along Green River between Niagara and Owensboro.

Unknown parties are drilling south of Anthoston, in Henderson County. Thomas Wittmer is drilling No. 4 C. M. Gish farm, just west of Niagara. Welfare Oil Co. is drilling No. 2 Arch Hatchett farm, same field. H. O. Keener is drilling No. 1 Hickman Smith farm, and numerous other locations made for wells as soon as the drilling tools can be moved in.

#### Ohio County

In the Whittaker Pool of Ohio County, the Ohio Oil Co.'s No. 14 well, 200 feet

(Continued on Page 145)

# Extend Ward County Two Directions

## Tests Showing for Production in O'Brien and Bennett Pools. Salt Encountered Higher in North of Penn Pool, Ector County

By L. E. Bredberg
*Fort Worth Bureau, The Oil and Gas Journal*

FORT WORTH, Tex., Apr. 7.—Ward County created most excitement in the Permian Basin this week when two wells on strictly opposite sides of the county extended production several miles each in their respective areas. A sale of approximately 5,692 acres in Ector County, near the Penn Pool by Turman and Maxwell to the Skelly Oil Co., also created considerable conversation. L. C. Turman, independent operator at Fort Worth, made the sale selling only the acreage owned by the Turman and Maxwell partnership. Consideration of the purchase was $600,000, payable by $200,000 cash on approval of title, $200,000 notes bearing 6 per cent interest, payable $20,000 per month, and $200,000 out of one-half of seven-eighths of the first production. No drilling obligation is imposed on the Skelly Oil Co. in the purchase. This sale does not affect L. C. Turman's individual interest in his undivided 62½ acres out of the S half of NW Section 28, Block 45, 2-S, T.&P. Survey, and all properties owned jointly in the county by Turman and Brown are unaffected by the sale.

In Block B-15 there were approximately 2,038 acres in the deal, in Block B-14 there were 581 acres; in Block B-8 there were 1,663 acres; in Block 44, 2-S, T.&P., there were 660 acres; in Block 44, 3-S, there were 20.12 acres; in Block 45, 2-S, there were 971 acres; in Block B-16 there were 40 acres. Four hundred and five acres of this amount of acreage is just north of production in the Penn Pool.

### O'Brien Pool Extension

On the northern border of Ward County in the O'Brien Pool, Sid Richardson and others' No. 1 Edwards and O'Brien is showing good for a commercial producer at a total depth of 2,686 feet where it is now standing. It is in Section 5, Block F, G.M.M.B.&S. Survey, approximately midway between production on its south and north, and looks as if it will unite the two areas with production, making a field about 12 miles long, if the intervening acreage between it and the production on both sides proves productive. The production about 5 miles to the north of this new extension well is only about 6 miles from the southern edge producers in the Hendricks Field, Winkler County, but intervening dry holes prove a saddle underlies the acreage there, and that the O'Brien Pool cannot be linked with the Hendricks Pool.

Top of the pay in Richardson's well was encountered at 2,655 feet, although the first oil showing was found from 2,555-62 feet with an increase from 2,585-98 feet, 2,615-31 feet and 2,660-70 feet. Elevation of the well is 2,655 feet on the surface. The owners are now standardizing to clean out the hole, which is badly caving, and it may be drilled deeper.

### Bennett Pool Extended

Another test in Ward County, on the southern side, drew much attention during the past few weeks, especially this week when it showed up as a producer, and a 3-mile southwestern extension to the Bennett Pool in Section 16, Block 34, H.&T.C. Survey. The new well, owned by C. C. Dorr and Atlantic Oil Producing Co., is in the NE cor., Section 2, on the J. E. Costley ranch in the J. W. Howe Survey, a river section, and may be proof of a fair sized pool lying between the two producing wells on the Bennett ranch and it. The California Co. and Shell Petroleum Corp. own the majority of the acreage between the two producing areas, the rest of the near-by acreage being somewhat cut up, and owned by different operators and companies, with the Atlantic Oil Producing Co. owning the majority of it.

The Dorr test topped the pay sand at 2,604 feet, and is shut down at 2,614 feet making an estimated 25 bbls. per day. After it is cleaned out it will no doubt make a better average, although it may probably not be a big well. It had a small showing of oil at 2,410 feet and another at 2,440 feet, and made an estimated 1,000,000 feet of gas at 2,602-03 feet in sandy lime. It helps to bear out the theory there is a saddle between the Hendricks Pool in Winkler County and the Fort Stockton "high" to the south, and that there are sand lenses in this saddle carrying oil. Probably no large pools or large wells will be found in this saddle, and this has practically been proven by the Shipley Pool with its small wells, and it being a small pool, and the small producers near Grand Falls south of the Shipley Pool, and the two small producers in the Bennett Pool. The O'Brien wells to the north have not been as large producers as the majority of the wells in the Winkler Pool, and are similar to the wells found in the Shipley Pool.

### Salt Higher in Penn Pool

An interesting feature of the Independent Oil Co. and Tidal Oil Co.'s No. 1 Scharbauer in Section 6, Block 44, 3-S, T.&P. Survey, north of the Penn Pool in Ector County, was the encountering of salt approximately 45 feet higher than the nearest test drilling to the SE between it and the pool. Top of the salt in the Independent well was found at 1,020 feet. Elevation of the test is 2,924 feet. The Texas Pacific Coal & Oil Co.'s test in Section 28, still farther northwest of the pool, is also reported having found the salt about 45 feet higher than was encountered in the Independent test, which makes this direction look considerably more promising, if the salt can be relied upon in this area as a definite marker.

There are now 10 producing wells in the Penn Pool, Ector County, one of the latest being the smallest yet completed. This is Penn and Humble's No. 2 York, 970 feet from the north and 440 feet from the west line of Section 16, Block 44. It topped the pay at 3,614 feet and is bottomed at 3,693 feet. The first 16 hours it flowed 210 bbls. and the next 24 hours only gauged 191 bbls. A 300-quart shot was set off from 3,599-3,693 feet and it more than doubled its previous record, flowing 469 bbls. in 15 hours.

The Transcontinental Oil Co., which last week purchased the S half of the N half of Section 3 from the University Lease Board, made a location in the northeast corner of the lease, offsetting Landreth Production Corp.'s No. 2-T University. This is the farthest location to the south, and will be closely watched for developments when it gets down to the pay horizon. Although it will not be a large extension well to the south it will be somewhat of a gauge as to what may be expected of the acreage on this end of the pool.

The Landreth Production Co. brought in one of the best wells yet found in the field this week, when its No. 2-S came in for 1,139 bbls. the first 24 hours and made 1,452 bbls. on April 7. It is still drilling ahead. It topped the pay at 3,370 feet. It is in the northeast corner of Section 2, University Survey.

### Pipe Line Work

The Humble Pipe Line Co. has completed its connecting link from the Penn Pool, Ector County, to its main line running from Winkler County to McCamey, and has tested the line preparatory to running oil through it from the pool. This line is about 12 miles long, and gives the pool its fourth outlet, the Magnolia, Burford and Gulf Pipe Line Co. preceding it with lines which have all been running crude from the pool for some time.

There are unconfirmed reports that Buell and Hagan and the Atlantic Pipe Line Co. would construct a connecting line from the Atlantic Oil Producing Co.'s No. 1 Shearer in Section 107, Block 10, H.&G.N. Survey, Pecos County, to the 2-inch line which runs from the Pecos Valley Pool to a loading rack south on the Orient Railroad. This would give the Masterson area its first pipe line outlet. There are now two wells producing approximately 130 bbls. of oil per day, in the pool.

The World Oil Co.'s No. 1-C McDowell, the discovery well in northern Glasscock County, which has been producing approximately 10 months, has been deepened to a total depth of 2,440 feet, with no increase in oil. The company is now putting it on the pump. It is in Section 21, Block 34, Township 2s, T.&P. Survey.

Total production of Texon Oil & Land Co.'s No. 1-B University, the first deep producer in the Big Lake Pool, Reagan County, produced 88,617 bbls. during March, a daily average of 2,858.61 bbls. It has been maintaining a daily average of better than 2,850 bbls. since the first of the year, but has set no peak since January 7 when it made 2,946 bbls.

### WEST TEXAS PRODUCTION
**Week Ending April 5**

| County— | No. wells | Prod. |
|---|---|---|
| Andrews | 1 | 169 |
| Crane | 339 | 37,210 |
| Crockett | 46 | 1,735 |
| Fisher | 7 | 796 |
| Ector | 9 | 3,900 |
| Garza | 5 | 49 |
| Glasscock and Howard | 502 | 39,335 |
| Jones | 73 | 1,335 |
| Loving | 20 | 1,205 |
| Mitchell | 145 | 2,283 |
| Pecos | 438 | 118,894 |
| Reagan | 253 | 16,715 |
| Runnels | 3 | 16 |
| Scurry | 5 | 17 |
| Upton | 252 | 9,000 |
| Ward | 25 | 1,685 |
| Winkler | 604 | 85,795 |
| Total production this week | 2,727 | 320,139 |
| Total production last week | 2,721 | 338,076 |
| Difference | 6 | 17,937 |

### Another Deep Test

The deepest test in the Permian Basin, outside of the Big Lake Pool, is P. H. Williams' No. 1 Ash Brothers, in Section 20, Washington County School Lands. It is now drilling below 8,230 feet.

Production in the Hendricks Pool, Winkler County, for March was 2,702,885 bbls., an increase of 157,120 bbls. over the February total, giving the pool

(Continued on Page 137)

## WILDCAT OPERATIONS IN WEST TEXAS

**Week Ended April 7**

| Company, farm and location— | Remarks— |
|---|---|
| **ANDREWS COUNTY** | |
| Deep Rock Oil Co. et al's No. 1 Mathis, 990 ft. from S and W, Sec. 4, Blk. A-46, Public School Land | Total depth 1,190 ft. |
| Deep Rock Oil Co.'s No. 1 Miles, 990 ft. S, 1,650 ft. E. of NW cor., Sec. 22, Blk. A-46, School Land | Running 10-in. casing; total depth 1,412 ft. |
| Fuhrman Pet. Corp.'s No. 1 Ford, 440 ft. from S and 2,200 ft. from W of Sec. 16, Blk. A-43, Public School Land | Fishing; total depth 1,000 ft. |
| Deep Rock Oil Co. et al's No. 1 King, 330 ft. from N and 2,310 ft. from E, Sec. 11, School Blk. A-46 | Drlg. 2,250 ft.; top salt 1,697 ft. |
| R. R. Penn's No. 1 Wilson, C, Sec. 20, Blk. A-37, School Blk. | Rigging up. |
| **BORDEN COUNTY** | |
| Moncrief et al's No. 1 Munger, 1,980 ft. from N and E, Sec. 15, Blk. 31, Twp. 4n, T.&P.R.R. Sur. | Shut down 3,517 ft.; 1 bbl. water hourly 3,418-28 ft. |
| Phillips et al's No. 1 Goode, 330 ft. N and E of SW cor. SE of Sec. 46, Blk. 33, Twp. 4n, T.&P.R.R. Sur. | Drlg. 2,100 ft. |
| Teas & Wheeler's No. 1 Long, 1,320 ft. N and E of Sec. 27, Blk. 30, T.&P. Sur. | Top salt 1,080 ft.; shut down 2,540 ft. |
| **BREWSTER COUNTY** | |
| Brewster Oil Co.'s No. 1 fee, 2,640 ft. S and 2,598 ft. E of NW cor., Sec. 45, Blk. G-15, G.C.&S.F. Sur. | Shut down 1,935 ft. |
| E. L. Chapman's No. 1 Skinner, C SW SE, Sec. 100, Blk. 2, G.C.&S.F. Sur. | Shut down 1,250 ft.; hole full water 1,135-85 ft. |
| Trans-Pecos Oil & Gas Co.'s No. 1 Jones, 920 ft. from N and 2,500 ft. from E of Sec. 18, Blk. G-15, G.C.&S.F. R.R. Sur. | Show oil 1,830 ft.; shut down 2,137 ft. |
| Van McPhail's No. 1 McIntyre, SE cor., Sec. 59, Blk. 352, 7 mi. S of Alpine | Shut down 1,740 ft. |
| **COKE COUNTY** | |
| Arkansas Fuel Oil Co.'s No. 1 Stepp, 1,020 ft. NE, 2,340 ft. W of SE cor., Sec. 35, Blk. 1-A, H.&T.C. Sur. | Rigging up. |
| Cates & Fitzhugh's No. 1 Mimms, 660 ft. N and W of SE cor., Sec. 39, Blk. W, T.&P.R.R. Sur. | Location. |
| Lipan Oil Co.'s No. 1 E. C. Rawlings, Sec. 390, Blk. 1-A, H.&T.C. Sur., elev. 2,750 ft. | Shut down 2,892 ft. |
| **CONCHO COUNTY** | |
| Duffy et al's No. 1 Callan, 1,520 ft. N and 1,120 ft. W of SE cor., Sec. 21, Blk. 10, H.&T.C.R.R. Sur. | Spudded and shut down. |
| Turner et al's No. 1 Borsig, 150 ft. from S of NE cor., G. Emmig Sur. 130, 6 mi. W of Paint Rock | Shut down 735 ft. |
| Watchorn Oil & Gas Co. et al's No. 1 Noyes, 1,320 ft. from N and W of Sec. 19, Blk. 70, H.&T.C. Sur. | Drlg. 535 ft. |
| **CRANE COUNTY** | |
| Cranfill et al's No. 1 Tubb, 2,310 ft. from N and 330 ft. from E of Sec. 8, Blk. B-27, Public School Land | Drlg. 131 ft. |
| Duffy et al's No. 8 Cowden et al, 660 ft. from S and W lines of Sec. 18, Blk. X, C.C.S.D.&R.G.N.G. Sur. | Total depth 2,527 ft.; show oil 2,330 ft.; top pay 2,340 ft.; 1,300 ft. oil in hole before shot; now testing after shot. |
| Humble Oil & Ref. Co.'s No. 2-C University, 2,310 ft. N and 330 ft. W of SE cor., Sec. 40, Blk. 30, University Land | Drlg. 2,515 ft. |
| Warner-Quinlan Co.'s No. 8 University, 990 ft. S and 330 ft. W of NE cor. of SW, Sec. 39, Blk. 30, University Land | Top pay 2,894 ft.; 1,500 ft. oil in hole; total depth 3,012 ft.; fishing tools after shot and first 24-hr. flowing. |

(Continued on Page 138)

# Collingsworth County Test Bails Oil E

## First Producer in That Panhandle District. Moore County Opens Another Gas Area. Taack Pool May Be Extended

By L. E. Bredberg
*Fort Worth Bureau, The Oil and Gas Journal*

FORT WORTH, Tex., Apr. 7. — The main feature of the week in the Panhandle district was the test of the Shoupe Brothers on the Aldons farm, 410 feet from the north and 330 feet from the east of Section 96, Block 16, H.&G.N. Survey, near the northern boundary of Collingsworth County, on the southern flank of the granite ridge which runs through the Panhandle. If the well proves a producer it will be the first oil well of the county and will throw open a new area to activity, and may mean the leasing of thousands of acres in the vicinity of the well, and probably all over the county.

The test topped a granite wash pay at 2,194 feet and was shut down at 2,198 feet bailing 10 bbls. of oil of 34 gravity. Five hundred thousand feet of gas was struck at 1,678-1,842 feet, helping to lend pressure for production, and making the area look better and more likely as an oil producing area. The first show of oil was seen at 2,177 feet.

Wischkamper drilled a dry hole 3 miles southwest of this discovery in the SE Section 93. Total depth was 2,624 feet. If a pool is opened by the Shoupe well, this dry hole will mean a defining point to the southwest. Production, if there is any in this area, will probably run to the north, for a few miles in that direction, across the line in Wheeler County there is considerable gas production.

### Gray County Agreement

Several wells are shut down in the top of the pay in Gray County by agreement, and there was only one small well completed in the flush production during the week, although the county gained in daily average, other wells on production making the gain. The Panhandle district showed an increase of 1,041 bbls., Gray and Wheeler County making the most of this gain.

Moore County, in the Panhandle district, got a big gasser this week when Operators Royalty Co. and the Dana Oil & Gas Co.'s No. 1 C. R. Jones in the SW cor. of SE Section 164, Block 3-T T.&N.O. Survey topped a gas sand at 3,225-3,360 feet and an oil pay at 3,360 feet and started spraying 10 bbls. of oil per day with 26,000,000 feet of gas. Bottom of the hole is 3,360 feet. This discovery will give impetus to drilling activity in the vicinity of the well, and the Panhandle may look to this area for another large amount of gas production.

The Panhandle district is one of the largest, if not the largest gas producing area in the United States. Another company has been chartered in Texas to drill for gas, construct gas lines and transport it through its lines. This is the Texas Interstate Pipe Line Co. of which Frank Parish is president, Burt R. Bay vice president, and Ralph G. Crandall secretary and attorney. The company has announced location for two tests in Carson County and one in Potter County.

### May Extend Taack Pool

A semiwildcat well was showing for a producer south of the new Taack Pool in Young County. This well is Terrel and other's No. 1 Remington in the north half of Section 2,249, T.E.&L. Survey. The oil sand was found at 667 feet, and the well started flowing by heads, showing up as some kind of a producer. It will extend the Taack Pool or open up a small area to production, separate from that pool, and give the county another producing area.

E. J. Stump's No. 1 Brewster in Section 48, Blind Asylum Lands, the newly discovered semiwildcat of eastern Shackelford County, formerly completed for a 325-bbl. well in the Ibex sand at 2,105-06 feet, was deepened to 2,119 feet and found water from 2,118-19 feet. It is now plugged back to 2,117 feet and is producing 150 bbls. per day on the pump. It is east of the Phillips Petroleum Co.'s production.

It is reported that the Van-Mex and Kewanee Oil & Gas Companies have been checking Young Brother's, Alexander and Woodley Petroleum Corp.'s producing properties in the Blake Pool, Brown County, which consist of the J. F. Armstrong lease with six wells producing 20 bbls. per day, the G. T. Butler lease with three wells producing 10 bbls. per day, the Hickman lease with 22 wells producing 385 bbls. per day and the Kilgore lease with five wells producing 90 bbls. per day, making a total of 505 bbls.

### Overall Pool

The Overall Pool, Coleman County, produced 29,930 bbls. during March and has produced a total of 490,440 bbls. from its discovery October 1, 1928, to April 1, 1930.

A short 6-inch gas line is being constructed by the Consolidated Gasoline Co. from W. K. Hyer and others' No. 1 Patterson in the NE cor. of SE Section 78, Block 4, H.&T.C. Survey, 1½ miles east of Cisco in Eastland to the company's booster plant which is midway between Cisco and Eastland. The gas from the well, which is making about 4,500,000 feet per day, will be stripped in the absorption plant of the company and the residue used for fuel. The gasser was completed last week in the Lake sand at a total depth of 3,326 feet.

The Magnolia Pipe Line Co. completed its 4-inch line from its Electra station to the Smith-Brady Pool in Wilbarger County, and connected to the Atlantic Oil Producing Co.'s Lido-Waggoner lease. It also connected into 17 other leases in and around the Rock Crossing Pool, which the Humble Pipe Line Co. has been running, and will connect to several other leases and raise the daily average runs from 1,600 bbls. to 2,500 bbls.

Sun Oil Co.'s No. 1 Milburn, in the Joseph de Guire Survey between the Huggins and Bulcher Pools in Cooke County, an extension well, was completed this week for 22½ bbls. of oil and 100 bbls. of water. It is not much of a well itself, but may mean the linking of the two pools, and a vast amount of new production between them.

**NORTH TEXAS PRODUCTION**
**Week ending April 5**

| Panhandle District— | Prod. |
|---|---|
| Carson County | 9,440 |
| Hutchinson County | 22,240 |
| Gray County | 57,950 |
| Moore County | 521 |
| Potter County | 50 |
| Wheeler County | 785 |
| Total this week | 90,986 |
| Total last week | 89,945 |
| Decrease | 1,041 |
| Wichita Falls District— | |
| Archer County | 17,600 |
| Baylor County | 820 |
| Clay County | 796 |
| Cooke County | 4,319 |
| Foard County | 229 |
| Jack County | 4,189 |
| Haskell County | 58 |
| Montague County | 6,338 |
| Throckmorton County | 843 |
| Wilbarger County | 27,105 |
| Young County | 9,990 |
| Wichita County | 25,601 |
| Total this week | 97,888 |
| Total last week | 97,820 |
| Increase | 68 |
| Ranger District— | |
| Brown County | 7,840 |
| Callahan County | 3,638 |
| Coleman County | 4,980 |
| Comanche County | 440 |
| Palo Pinto County | 695 |
| Eastland County | 5,102 |
| Shackelford County | 6,369 |
| Stephens County | 6,653 |
| Total this week | 35,717 |
| Total last week | 35,935 |
| Decrease | 218 |
| Grand total this week | 224,591 |
| Grand total last week | 223,700 |
| Decrease | 891 |

**WICHITA FALLS COMPLETIONS**
**Week Ending April 5**
**Archer County**

Fain & McGaha Oil Corp.'s No. 1 Ray was dry and abandoned at 1,506 feet. Golding-Cochran's No. 1 Phillips was dry and abandoned at 1,201 feet. Lawson-Duke's No. 3 Young had an initial production of 20 bbls. at 1,402-05 feet. J. H. Massie's No. 2 Richardson had an initial production of 263 bbls. at 1,372-77 feet. Prairie Oil & Gas Co.'s No. 9 Clark-Richardson was dry and abandoned at 1,439 feet. Shappell Oil Co.'s No. 14 Prideaux was dry and abandoned at 693 feet. Its No. 15 Prideaux had an initial production of 10 bbls. at 675-81 feet. Simms Oil Co.'s No. 1 Fish was dry and abandoned at 1,453 feet. Underwood Drilling Co.'s No. 1 Farmer was dry and abandoned at 1,500 feet.

**Baylor County**

Madden & Rose and others' No. 1 Fancher & Sons was dry and abandoned at 1,600 feet.

**Cooke County**

Sun Oil Co.'s No. 1 Milburn had an initial production of 22½ bbls. of oil and 100 bbls. of salt water at 1,210-19 feet.

**Jack County**

C. W. Boller's No. 4 Raley had an initial production of 40 bbls. at 3,211-16 feet. Panhandle Refining Co.'s No. 4 Eaton & Daniel had an initial production of 100 bbls. of oil and 5 bbls. of water at 3,085-3,112 feet. T. G. Shaw's No. 1-A Loving was dry and abandoned at 3,350 feet.

**Throckmorton County**

Martin and others' No. 1 Crawsin was dry and abandoned at 568 feet.

**Wilbarger County**

Atlantic Oil Producing Co.'s No. 9 Sigler had an initial production of 100 bbls. at 2,672-2,705 feet. Dixie Oil Co.'s No. 1 Waggoner was dry and abandoned at 2,385 feet. Empire Gas & Fuel Co.'s No. 31 Waggoner had an initial production of 90 bbls. at 2,273-2,306 feet. Fain & McGaha's No. 18 Waggoner had an initial production of 120 bbls. at 2,294-2,318 feet. Grayback Development Co.'s No. 2 Bud-Waggoner had an initial production of 75 bbls. of oil at 2,677-2,713 feet. Its No. 1 Eason-Waggoner-A was dry and abandoned at 2,205 feet. Venmex Oil Co.'s No. 1 Waggoner was dry and abandoned at 2,450 feet.

**Wichita County**

Hi-Land Oil Co.'s No. 5 Crudup had an initial production of 65 bbls. at 1,807-12 feet. W. H. Hammon's No. 12 Mitchell had an initial production of 18 bbls. at 1,286-1,319 feet. G. H. Howell's No. 1 Allen-Foster had an initial production of 2 bbls. at 893-96 feet. G. H. Howell's No. 2 Allen-Foster had an initial production of 12 bbls. at 467-69½ feet.

**Young County**

Bolin-Lindsey's No. 2 Wolf had an initial production of 15 bbls. at 870-86 feet. Brihill Oil Co.'s No. 1 Robinson had an initial production of 28 bbls. of oil and 16 bbls. of salt water at 734-41 feet. Mid-Tex Oil & Gas Co.'s No. 5 Childress-Donnell had an initial production of 210 bbls. at 3,315-25 feet. Pennell's No. 1 McLaren was dry and abandoned at 2,680 feet. Scott & Nance's No. 6 Payne was dry and abandoned at 4,300 feet. Halmack Oil Co. and others' No. 2 Carpenter had an initial production of 107 bbls. at 884-95 feet. Hamilton & Anderson's No. 1 Carpenter was dry and abandoned at 1,025 feet. Howard Petroleum Co.'s No. 1 Lowe was dry and abandoned at 715 feet. Independent Oil & Gas Co.'s No. 1 Lowe had an initial production of 37 bbls. at 635-37 feet. Jones & Sharp's No. 1 Kunkel was dry and abandoned at 1,303 feet. C. B. Long's No. 3 Hausler and others' was dry and abandoned at 1,100 feet. Amos-Mitchell's No. 2 Dunnegan had an initial production of 20 bbls. at 942-46 feet. Panhandle Refining Co.'s No. 1 Watson

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## WILDCAT OPERATIONS IN TEXAS PANHANDLE

**Week Ending April 7**
**CARSON COUNTY**

| Company, well, farm, name, section and block— | Remarks— |
|---|---|
| Champlin Ref. Co.'s No. 5 McConnell, 990 ft. S line, 330 ft. W line, N 120 ac., NW, Sec. 67, Blk. 4, I. &G.N. Sur. | Drlg. 2,810 ft. |
| Danciger O. & R. Co.'s No. 1 Block, 330 ft. N and E lines, Sec. 112, Blk. 4, I.&G.N. Sur. | S.D. 2,985 ft. |
| Delmar Oil Co.'s No. 5 Noel, 330 ft. S and W, NE cor. W½ SE, Sec. 198, Blk. 3, I.&G.N. Sur. | S.G. 3,000-10 ft.; S.D. 3,131 ft. |
| Cockrell-McIlroy Oil Co.'s No. 1 Eller, 330 ft. S and W, NE cor. NW, Sec. 200, Blk. 3, I.&G.N. Sur. | Drlg. 2,500 ft. |
| Cockrell-McIlroy Oil Co.'s No. 1 Simms, 330 ft. S and E, E 140 ac., N 160 ac., S 320 ac., Sec. 11, Blk. 7, I.&G.N. Sur. | Drlg. 1,924 ft. |
| Empire G. & F. Co.'s No. 1 Archer-B, 330 ft. N and E, SW cor. SW, Sec. 139, Blk. 3, I.&G.N.R.R. Sur. | Location. |
| Empire G. & F. Co.'s No. 1 Bennett, C SE, Sec. 6, Blk. B-5, B.&B.R.R. Sur. | Drlg. 1,090 ft. |
| Empire G. & F. Co.'s No. 1 Thorp, C NW, Sec. 26, Blk. T, A.B.&M. Sur. | U.R. 5-in. csg. 3,838 ft. |
| Empire G. & F. Co.'s No. 2 Deahl, C NW, Sec. 25, Blk. Y-2, G.B.&C.N.G.R.R. Sur. | Drlg. 2,060 ft. |
| Gulf Prod. Co.'s No. 1 Burnett-C, C SE SE, Sec. 35, Blk. 4, I.&G.N.R.R. Sur. | S.D. 2,755 ft; hard granite; 42,000,000 ft. gas. |
| Gulf Prod. Co.'s No. 2 Combs, 990 ft. N, 330 ft. W, SE cor., Sec. 38, Blk. 3, I.&G.N.R.R. Sur. | Location. |
| H.A.M. Oil Co.'s No. 1 Cooper, 330 ft. S and W, E½ NE, Sec. 5, Blk. 9, H.&G.N.R.R. Sur. | T.D. 3,105 ft; 2,000 ft. oil in hole. |
| Humble O. & R. Co.'s No. 2 Combs-Worley, 330 ft. S, 240 ft. E. NW cor. N½ SE, Sec. 36, Blk. 3, I.&G. N.R.R. Sur. | Location. |
| McClintock et als' No. 2 Garner, 330 ft. W and S of E 55 ac. of N 80 ac., NW, Sec. 105, Blk. 4, I.&G. N.R.R. Sur. | Spudding. |
| Osborne et als' No. 3 Percival, 330 ft. N and W, SE cor. E½ NE, Sec. 199, Blk. 3, I.&G.N.R.R. Sur. | Drlg. 3,000 ft. |
| Pansota Oil Co.'s No. 1 Block, 330 ft. S and W, NE cor. SW, Sec. 111, Blk. 4, I.&G.N.R.R. Sur. | S.D. 3,060 ft. |
| Phillips Pet. Co.'s No. 1-A Garner, 430 ft. S line, 330 ft. W, Sec. 114, Blk. 4, I.&G.N. Sur. | Drlg. 2,400 ft. |
| Phillips Pet. Co.'s No. 1 Pickens, 990 ft. E line, 230 ft. N line, NE cor., Sec. 31, Blk. 7, I.&G.N.R.R. Sur. | Spudding. |
| Phillips Pet. Co.'s No. 1 Johnson Bros. (Cart), 1,320 ft. N, 990 ft. E, Sec. 1, Blk. Y-2, T.T. Sur. | Location. |

(Continued on Page 141)

# Economical Operation of Small Wells

## Interesting Review of the Evolution of Pumping and Development of Production Practices in Eastern Fields

By P. H. Curry
Vice President, South Penn Oil Co.*

From the beginning of the petroleum industry, starting with 2,000 bbls. in the year 1859 to a total of 1,005,598,000 bbls. in the year 1929, there has been need of economy in operation. Each new field brought its prolific supply of crude, resulting in overproduction, causing reduction in price and resulting in older and sometimes nearly exhausted fields being either abandoned, curtailed, or produced with greater economy.

As early as 1866, torpedoing was resorted to in order to increase production or to induce wells to again produce by flowing. With the reduced pressure wells ceased to flow and it became necessary to supply each well with a boiler and engine for pumping, and as natural gas was not always available, it was necessary to resort to wood and coal for fuel. Where wells were pumped constantly it was necessary to have two pumpers. Every owner or manager of wells tried to devise new ways of getting his production with the least expense, more economical burners under boilers were tried, pumping wells by heads and cutting down on the hours necessary to produce a well's maximum was resorted to.

### Development of Pumping

Finally, someone conceived the idea that more than one well might be pumped from one central boiler. This required steam lines and to be able to carry steam any distance, under all kinds of weather conditions, it was necessary that the lines be enclosed in boxes. The replacing of steam line boxes was a constant expense. Someone decided it was possible and practical to pump two wells by one engine, by attaching to the bandwheel another crank arm aside from the one which was attached to the pitman of the walking beam. From this extra crank arm, placed opposite to the other, ran a wooden shackle to a crude form of pumping jack made of hewn timber. Next came the two opposite cranks on bandwheel connected by wooden shackle rods to a horizontal turnbuckle that rocked back and forth. On top of this turnbuckle were wrist pins to which the shackle lines were attached, being wooden rod lines swung on "V" type wooden pumping jack, the lines being united by iron strips which were constantly breaking in hot or dry weather.

The turnbuckle was more effective and from its use came the push and pull power. To George Allen of Franklin is given the credit of developing the pumping power. He invented the metal disc geared power, using a series of eccentrics. Field trials convinced Mr. Allen and others of the superiority of his invention, and in the year 1884, Mr. Allen took out patents on eccentric power and for many years enjoyed royalty returns from its use by other manufacturers.

Next came the bandwheel power with its wooden wheel, then the under pulled bandwheel power with eccentrics under the bandwheel. The steel wheel supplanted the wooden type. Today the bandwheel power is in use in every known oil field.

### Gas Engine Evolution

While Mr. Allen was developing the power, others were developing something other than the boiler and steam engine. To Joseph Reid of Oil City is given credit for the oil country type of gas engine, now so generally used in the producing and drilling of oil wells. In the year 1892, in his little shop on Elm Street, Oil City, he developed an oil burning engine and became convinced that such engine could be made to use crude oil and take the place of steam. In making his test it occurred to him that gas might be taken directly from the wells to the engine. While gas engines were previously in use for certain purposes, they were run on manufactured gas and required the constant attention of skilled mechanics. Mr. Reid used his first engine to run his machine-shop, the next was used for pumping oil wells on the Rynd farm and the next by the Oil City Derrick. Those familiar with the first installation, or who had experience with the starting of the first gas engines, will remember how skeptical the oil fraternity was in the beginning. Mr. Reid and others were persistent and today we have the combined gas engine and power to meet every requirement, from a few wells to many wells, the iron shackle rod instead of the old type wooden rod and a complete unit, requiring very little attention and reducing the expense of operation to a minimum.

### Use in Drilling

In addition to the gas engine's use in pumping units, it is also extensively used in the drilling of oil wells. A suitable clutch has been developed, which makes it possible to permit of the reversing of the engine. It is now almost the universal practice to employ gas engines in drilling, and the drilling with a gas or oil engine is now possible in localities where it would be prohibitive if it were necessary to burn coal under the boilers as in former years.

The Bradford Field was the last to adopt the gas engine and power, for which fact there was good reason. Timber having been cut and removed from the district, great slashings had been left by the timber cutters and every spring forest fires were numerous and if high winds intervened, many thousands of acres were devastated. The situation had been met with an iron pole derrick set on old casing, with the old steam engine getting its power in the form of compressed air, the air being supplied through suitable pipes from a central plant. Since compressed air is an expensive process for long pumping, this plan was successful as long as the average time for pumping each well was about 20 minutes. With the advent of the flooding system, now generally used, and the necessity of pumping great quantities of water with the oil, the use of compressed air has become prohibitive and the gas engine and power have supplanted it. Today there is little danger from forest fires, due to the second crop of timber and the country being more widely populated.

### Use of Wire Lines

In most of the shallow fields, wells are equipped with wood and iron sucker rods. In deeper fields, where wells are spaced farther apart and powers cannot be used to advantage, short iron derricks over each hole are used. Wire lines are used instead of rods for pumping, due to the fact that when it is necessary to pull a deep well a wire line can be drawn in 30 minutes by one man, while rods require the services of three men for about a half day.

The faithful pumper knows his wells as the jockey knows his horses. He knows that one of his wells will produce its given quantity of oil by pumping once a week, while another well on the same farm must be pumped every other day, and still another must be pumped daily.

### Repressuring

Many methods are employed in securing production. As early as 1860 gas pumps were used in the Tidioute Field and in the early seventies they were in general use in many fields. Pumps were resorted to when producers became anxious to secure every barrel of oil possible from under their lands and aimed to prevent their neighbors from securing the same. An advance step in this respect is the system of repressuring, which has brought to the operator better returns. Repressuring has brought excellent returns in fields where it had been supposed the gas pumps had nearly exhausted the oil. Speaking in this instance of repressuring, we have in mind the use of gas, air, or a mixture of gas and air.

Some sands respond freely to repressuring. I have in mind a locality where a given number of wells in 1916 produced 523 bbls. of oil for the year. Air repressuring was resorted to, and at the end of the third year, the same wells produced 2,100 bbls. for the year, and for the year 1929, these same wells produced 1,100 bbls.

In the Bradford Field, since 1913 efforts have been made to increase production by the introduction of water. In the beginning slight increases were obtained and this led to a more intensive study of the process, resulting in turn in the circle-flooding with its central well as a water intake, the straightline system and the five-spot. Time does not permit a fully detailed description of these methods.

At first water was introduced into the intake well by puncturing the casing, thus permitting the water to flow into the sand. Results were always doubtful due to sand and sediment washing into the oil sand, sometimes completely covering it. With the five-spot method, the water is taken to the sand through 2-inch tubing set on packers, the water first passing through recording water meters. This method gives the operators full knowledge of the amount of water each well takes and an opportunity to increase or decrease the amount of water to each intake well. This is more advantageous because of the variability of sand formation, some being permeable and others tighter.

### Tankage

The layman would be inclined to suppose that the operators' troubles cease when the oil is brought to the surface, but this is not the case.

The operator is responsible for the oil until it has been gauged and run by the pipe line company. In the old fields the operator will not fill the tank oftener than once a month. In the early days oil was produced into wooden tanks, resulting in great losses by evaporation. Later the wooden tank was covered and housed in an effort to gain uniform temperature. Today the majority of the operators use steel tanks with tight tops, which carry slight pressure. Records can be secured to show great saving through the use of the steel tank.

As I reflect on the evolution of oil production, many almost incredible changes have taken place. I recall the hardships of men and teams, away for weeks at a time in inaccessible places, poorly provided with food and shelter, with no means of communication other than the nearest telegraph office, perhaps several miles distant and reached by walking or on horseback. They suffered the hardships of all pioneers, with no thought of bad road conditions or long

(Continued on Page 138)

*Before Eastern district, A.P.I. Division of Production, at Pittsburgh, Pa. April 7.

## OSAGE LEASES BRING AVERAGE OF $6.36 PER ACRE AT AUCTION SALE

An average of $6.36 per acre was paid in bonuses for 29 tracts of Osage County land at a sale of leases in the Osage Nation held in Pawhuska, Okla., on Saturday. A total of 4,538.12 acres was disposed of at $28,850.

The largest price ever paid for a quarter section in Osage County was $1,990,000, or $12,438 per acre. The largest price paid Saturday was $5,200, which the Lewis Production Co. paid for the NW Section 34-20-10. Township 27-11 had an attraction for the Lewis organization as it was the high bidder on the four quarter sections offered out of that township. None of the large oil companies that carried off the cream of the Burbank leases (likewise some of the said disappointments in that area) bought anything at Saturday's sale, and most of them did not send a representative to the sale.

Following is a list of the tracts sold and their purchasers and the bonus prices paid:

Schedule of lands of Osage Reservation, Oklahoma, offered and sold at public auction, April 5, 1930:

| Tract No. | Description | Acres | Bonus | Purchaser |
|---|---|---|---|---|
| 1 | Fr. NE Sec. 10-24-12 | 58.12 | $50 | D. B. Mason, Tulsa. |
| 2 | NW Sec. 10-24-12 | 160 | 100 | D. B. Mason, Tulsa. |
| 3 | NW Sec. 24-20-11 | 160 | 100 | Sand Springs Home, Sand Springs, Okla. |
| 4 | SW Sec. 24-20-11 | 160 | 100 | Sand Springs Home, Sand Springs, Okla. |
| 5 | SE Sec. 11-21-11 | 160 | 100 | J. W. Field et al, Tulsa. |
| 6 | NW Sec. 29-21-11 | 160 | 200 | D. F. Millard and L. G. Stanley. |
| 7 | SE Sec. 8-22-11 | 160 | 100 | A. F. Dahrooge, Pawhuska. |
| 8 | NE Sec. 27-22-11 | 160 | 1,000 | Ray Branstetter, Skiatook, Okla. |
| 9 | SW Sec. 34-22-11 | 160 | 100 | Ray Branstetter, Skiatook, Okla. |
| 10 | SE Sec. 35-25-11 | 160 | 600 | J. H. Alexander, Tulsa. |
| 11 | SW Sec. 36-25-11 | 160 | 1,300 | J. H. Alexander, Tulsa. |
| 12 | SE Sec. 21-27-11 | 160 | 2,200 | Lewis Production Co., Tulsa. |
| 13 | NW Sec. 24-27-11 | 160 | 3,100 | Lewis Production Co., Tulsa. |
| 14 | SW Sec. 24-27-11 | 160 | 3,800 | Lewis Production Co., Tulsa. |
| 15 | NE Sec. 28-27-11 | 160 | 1,800 | Lewis Production Co., Tulsa. |
| 16 | NW Sec. 34-20-10 | 160 | 5,200 | Lewis Production Co., Tulsa. |
| 17 | SW Sec. 29-21-10 | 160 | 500 | Devonian Oil Co., Tulsa. |
| 18 | NW Sec. 32-21-10 | 160 | 900 | Devonian Oil Co., Tulsa. |
| 19 | NE Sec. 18-22-10 | 160 | 2,100 | Mid-Co Oil Corp., Tulsa. |
| 20 | SE Sec. 24-23-10 | 160 | .... | Passed. |
| 21 | NE Sec. 31-23-10 | 160 | 100 | Union Oil & Mining Co., Tulsa. |
| 22 | NE Sec. 31-27-10 | 160 | .... | Passed. |
| 23 | NW Sec. 31-27-10 | 160 | .... | Passed. |
| 24 | NW Sec. 6-21- 9 | 160 | 500 | L. G. Stanley and D. F. Millard. |
| 25 | SW Sec. 16-21- 9 | 160 | 500 | Ohio Osage Oil Co., Tulsa. |
| 26 | SE Sec. 17-21- 9 | 160 | 1,100 | Ohio Osage Oil Co., Tulsa. |
| 27 | SE Sec. 29-22- 9 | 160 | 100 | H. H. Mundy and A. G. Oliphant. |
| 28 | SW Sec. 29-22- 9 | 160 | 1,000 | H. H. Mundy and A. G. Oliphant. |
| 29 | NE Sec. 29-23- 9 | 160 | 100 | A. H. Craver et al, 616 Trust Bldg. |
| 30 | SE Sec. 3-25- 8 | 160 | 100 | A. G. Oliphant, Tulsa. |
| 31 | NW Sec. 24-23-7 | 160 | 1,700 | A. G. Oliphant, Tulsa. |
| 32 | NE Sec. 18-23- 6 | 160 | 300 | Western American Oil Corp, Bartlesville. |
| | Acreage sold ..... | 4,538.12 | $28,850 | |

# Purpose of A.P.I. Production Chapters

## Improvement From Economical Viewpoint in Solution of Operating Problems. Increase of Ultimate Recovery From Sands

By J. R. McWilliams
Production Engineer, Skelly Oil Co.*

The purpose in creating A.P.I. chapters is to afford an opportunity for those directly charged with the actual producing of oil and gas to obtain and maintain closer contact with one another. Co-operation is becoming the watchword of the petroleum industry and yet there are various aspects concerning its practical application which must be taken into consideration before co-operation becomes a reality. One of the primary requisites of co-operation is a close acquaintanceship and understanding among those who propose to co-operate. Without mutual confidence destructive and uneconomic competition predominates over economic co-operation. It is all very well to put the stamp of executive approval upon a co-operative movement but the actual functioning of the plan rests upon the shoulders of the operating force and it is difficult to change competitive customs once they are established even though executive approval has been granted. However, closer contact between individual operators promotes, through a recognition of mutual problems, a better feeling of fellowship and confidence.

A direct result expected from this closer contact is the improvement from an economical viewpoint in the solution of operating problems. To a great extent a field man whose success as an operator is based upon his own experience, is inclined to solve his own problems and expect his neighbor to do likewise not being very curious as to what solution his neighbor has for problems identical with his own. In fact, many times an operator is proud of his own accomplishments when in reality his neighbor's accomplishments far exceed them. There is no sound reasoning behind this attitude of "paddle your own canoe," for the penalty in general is higher operating costs per barrel of oil produced rather than a loss in production to the other fellow. Generally we leave the sands saturated with too much oil to warrant this supposed loss in production. A frank and open discussion of the problems confronting the field men cannot fail to benefit those participating, for, as someone has said, "if I have a dollar and you have a dollar and we exchange dollars, we each still have a dollar, but if we each have an idea and exchange ideas we each have two ideas."

### Progress Based on New Ideas

Progressive methods are based upon new ideas. Furthermore, there are many men charged with operations in the field who are capable of judging the value of an idea and adapting it to practice, but do not have the ability to create ideas for themselves. There is no reason why operators should not benefit collectively instead of individually from the good and bad solutions applied to field problems. I do not wish to leave the impression that field men are unwilling to exchange ideas with one another, but rather that there has been an utter lack of co-ordination in this respect. Chapter meetings in the Mid-Continent have proved the fact that field men realize the rapid advance in production methods and desire not only to keep pace but to aid in furthering that advance.

The paramount problem confronting the producing division of the oil industry today, except, perhaps, that of conforming supply with demand, is to increase the ultimate recovery from the oil sands. It is a problem worthy of the attention of the most able minds in the business and yet it is apparent, from conflicting recommendations and solutions offered, that there are too many unknown or perhaps unnoticed quantities in the equation which must be reckoned with before much progress can be made. The problem has practical as well as technical aspects. The correlation of pertinent facts of either character is urgently needed. Discussion of this problem "out on the firing line" should induce progressive operators to perform some co-operative experiments with the viewpoint of adding to the fund of knowledge on this subject, and chapter meetings provide an excellent forum for this type of advancement.

### Dissemination of Information

The dissemination of information pertinent to field operations can conveniently be brought about through chapter meetings. Consider for example, the A.P.I. standardization program. There is some uncertainty in the minds of many field men concerning A.P.I. standardized equipment during the transition period from the old to the new products. This is natural if viewed from some particular angle yet the picture as a whole presents a sound economical project. In order to acquaint field men with the standardization program, C. A. Young, director of standardization, was asked to address some of the Mid-Continent chapters on the subject. It was apparent that many of the men did not clearly understand that a product must actually have the A.P.I. monogram stamped on it in order to qualify as a standardized product, and that the monogram on a manufacturer's product is his guarantee that he has manufactured that product to meet definite specifications set up by the A.P.I. committees. In other words, one must look for the monogram before censuring a product because it does not interchange with another, for in all probabilities one of the products is not A.P.I. However, it is to be expected that some specifications will have to be changed to meet changing field conditions. Requests for such changes can very well originate in chapter meetings since a consensus of opinion can be obtained and specific recommendations have a definite procedure through the district organization to the proper standardization committee.

Local chapters may be organized as a part of their district section of the Division of Production in any suitable producing field subject to the approval of the officers of that district section. It is suggested that the vice chairman in each district section be designated as responsible for the organization and functioning of the chapters in his district. A committee composed of directing heads of production of several companies in the district is of immeasurable benefit in the support they can lend to the organization and management of chapter meetings. This support for the most part resolves itself into the production executive discussing the merits of chapter meetings with the men in his own and other organizations and thus encouraging their interest and attendance at meetings.

### Preliminary Work

The preliminary work necessary for the organization of a field chapter should be delegated to someone familiar with the purpose and merits of these meetings. His task is to broadcast the intention to organize a local A.P.I. chapter, giving the date and place for the first meeting. Notices in the local newspapers and various trade magazines are beneficial, and also mimeographed letters addressed to those residing in the district. It is also well to send a notice to the executive in charge of production of each of the companies operating in the locality. Probably the best method of procedure is a personal conference with each of the superintendents in the area, explaining the purpose for organizing a field chapter and requesting his support in the project by discussion with others, especially the men in his own organization, and attendance at meetings.

The organization meeting should be called by the district chairman or vice chairman of the Division of Production and one of these men should be present. In addition it is well to have some one present to outline the advantages to be gained by field meetings. The chapter should elect a chairman, vice chairman, and secretary-treasurer, who serves for one year or until their successors are elected. Subsequent to the organization meeting, the election of officers should take place annually. It is also advisable to elect a chapter committee composed of progressive men in the area to decide on chapter activities and lend their support to the success of the meetings.

At the present time the A.P.I. budget contains no provision for the expense of conducting chapter meetings. This expense is nominal but some funds are necessary for mailing notices of meetings, etc., and these funds can be procured by subscription, donation, registration fees, or any other method not in conflict with the general policy of the Institute provided no funds are derived through the sale of advertising nor of space for exhibition of equipment. Some of the Mid-Continent chapters raise their funds by creating a chapter membership of $1 per member. This money is disbursed upon the recommendation of the chapter committee. It should be understood this membership is in the local chapter only and not in the Division of Production.

### Chapter Meetings

The time for holding chapter meetings should be left to the discretion of each chapter. The Mid-Continent chapters hold their meetings monthly, generally at some community hall in the field. But these districts are fairly compact, and quarterly meetings might prove more advantageous in districts covering scattered fields.

It is suggested that the subject matter for meetings be decided upon by the chapter committee. The Mid-Continent chapters during the course of a year have discussed problems peculiar to their own area, but a plan is now being contemplated whereby the district program committee will provide a speaker for alternate meetings qualified to talk on subjects of more general interest.

The American Petroleum Institute desires to foster the organization of chapters in any suitable producing field because of the fact that participation in these meetings by field men should react to the benefit of the industry as a whole. I would advise this word of caution: Select your officers and committeemen with due consideration for their standing as progressive operators in the district. The chairman should have a wide acquaintanceship in the area and be interested in field meetings; the secretary can increase attendance and interest with notices giving the date, place, and program of meetings. The meetings will thrive in proportion to the amount of time devoted to them. There is every reason to believe that the encouraging results of the establishment of some of the Mid-Continent chapters will be repeated in other districts if the purpose of the chapters is clearly understood by the field men on those districts.

*Before Southwestern district, A.P.I. division of production, at Midland, Tex., April 10.

# OPERATIONS SLOW UP IN SYMPATHY WITH CURTAILMENT OF PRODUCTION

The March report of operations included five weeks' field work, which accounts for the seeming large increase in the number of completed wells in March over February.

As a matter of fact the average of completions in February was 52.8 wells per day while in the five weeks covered by the March report the number of completions averaged just under 50 per day.

Very large wells completed in the Oklahoma City Field in the State of Oklahoma, accounted for the increase in the total of initial production.

Oil producers are curtailing drilling operations generally just as they are curtailing production in the great flush fields of the country, and at the close of March there were only 856 rigs up and 3,511 wells classified as drilling, a total of 4,367 operations, a decline of 63 in rigs and 182 in wells drilling compared with the February report.

Following are the summaries of field work for March:

**SUMMARY OF ALL FIELDS**
**Wells Completed**

| Field— | Comp. | Prod. | Dry | Gas |
|---|---|---|---|---|
| Eastern | 369 | 1,971 | 30 | 42 |
| Central Ohio | 80 | 1,317 | 19 | 33 |
| Lima | 17 | 236 | 4 | 1 |
| Indiana | 16 | 461 | 3 | 5 |
| Michigan | 16 | 1,770 | 2 | 0 |
| Kentucky | 82 | 2,893 | 20 | 4 |
| Illinois | 21 | 403 | 11 | 2 |
| Kansas | 93 | 17,500 | 44 | 8 |
| Oklahoma | 285 | 372,423 | 89 | 32 |
| North Central Texas | 331 | 14,638 | 179 | 18 |
| East Central Texas | 29 | 9,406 | 19 | 0 |

| Field— | Rigs | Drlg. | Ttl. |
|---|---|---|---|
| East Texas | 3 | .... | 0 | 3 |
| West Texas | 76 | 16,600 | 31 | 0 |
| Panhandle Texas | 24 | 4,355 | 4 | 11 |
| Gulf Coast | 126 | 52,393 | 41 | 4 |
| Southwest Texas | 82 | 28,271 | 40 | 6 |
| North Louisiana | 59 | 6,915 | 21 | 9 |
| Arkansas | 16 | 213 | 10 | 0 |
| Montana | 5 | 283 | 1 | 0 |
| Wyoming | 3 | 1,664 | 0 | 0 |
| Colorado | 2 | .... | 1 | 1 |
| New Mexico | 11 | 2,451 | 5 | 0 |
| Total March | 1,746 | 536,163 | 555 | 180 |
| Total February | 1,479 | 437,231 | 393 | 170 |
| Difference | 267 | 98,932 | 162 | 10 |

**Rigs and Wells Drilling**

| | | | |
|---|---|---|---|
| Eastern | 92 | 312 | 404 |
| Central Ohio | 83 | 185 | 268 |
| Lima | 2 | 30 | 32 |
| Indiana | 6 | 36 | 42 |
| Michigan | 53 | 108 | 161 |
| Kentucky | 13 | 112 | 125 |
| Alabama | 2 | 3 | 5 |
| Mississippi | 3 | 17 | 20 |
| Illinois | 2 | 35 | 37 |
| Kansas | 51 | 250 | 301 |
| Oklahoma | 115 | 770 | 885 |
| North Central Texas | 75 | 362 | 437 |
| East Central Texas | 6 | 38 | 44 |
| East Texas | 2 | 13 | 15 |
| West Texas | 48 | 216 | 264 |
| Panhandle Texas | 29 | 142 | 171 |
| Gulf Coast | 38 | 194 | 232 |
| Southwest Texas | 48 | 115 | 163 |
| North Louisiana | 89 | 146 | 235 |
| Arkansas | 9 | 45 | 54 |
| Montana | 19 | 84 | 103 |
| Wyoming | 23 | 125 | 148 |
| Colorado | 16 | 77 | 93 |
| New Mexico | 29 | 64 | 93 |
| Utah | 3 | 32 | 35 |
| Total March | 856 | 3,511 | 4,367 |
| Total February | 919 | 3,693 | 4,612 |
| Difference | 63 | 182 | 245 |

## LION MANUFACTURING ASPHALT

The Lion Oil Refining Co. is building an asphalt plant at its Eldorado, Kans., refinery. The plant will have a capacity of approximately 350,000 tons daily.

# Problems in Air and Gas Injection

## Air Can Be Used Only When No Water Is Produced. Gravity Not Reduced While Natural Wet Gas Is Recirculated

By E. V. Foran
Production Engineer Fain-McGaha Oil Corp., Wichita Falls, Tex.*

Observations during the past few years with respect to the use of air, wet gas, or dry gas in the process of repressuring oil sands, have indicated variable reactions, depending upon the conditions under which the air or gas was applied. Preceding the acitve injection of air or gas in the sand, a thorough survey of the current oil, gas and water production should be made on as many individual wells as possible. The condition of the wells should also be carefully determined.

A survey of this character is of greatest value when made during the early life of the lease or pool, or at any time while the reservoir pressure is still very active in driving oil into the well. Under these conditions the gas-oil ratio of the different wells serves as an indicator of the relative oil and gas saturation of the sands surrounding the different wells. High gas-oil ratios under these conditions will indicate medium or low saturation of the sand while the low gas-oil ratios will indicate in general a highly saturated sand. It is possible also that some tight sands may have a high saturation and yet show a high gas-oil ratio, due to the ability of the gas to migrate through the tight sand more readily than the oil.

In those cases where surveys preliminary to repressuring in the later life of the pool are carried out, the gas-oil ratio is far less dependable as an indicator of saturation than it is during the early life of the pool, and may at times be very misleading. Due to the fact that gas depletion in any oil producing sand always precedes oil depletion, it is entirely natural to observe very low gas-oil ratios in the later life of the pool. The low gas-oil ratios under these conditions may be due to a number of factors which have greatly changed during the period between the early and later life of the pool. It is therefore evident under these conditions that low ratios may prevail as a result of normal depletion.

### Recoverable Reserves

However other surveys made during the later life of the pool, in which similar low gas-oil ratios prevail, may indicate a sand which has suffered little depletion of its oil and may contain large reserves readily recoverable by repressuring methods. This is true in those cases where the initial reservoir pressures were low and where only a very small volume of gas accompanied the initial oil production. Under these conditions insufficient gas energy results in ineffective drainage and limits the normal oil recovery to much less than could be expected where larger volumes of gas at higher initial reservoir pressures existed under otherwise similar conditions.

When the condition mentioned above exists in the later life of the pool, it becomes necessary to supplement the normal preliminary survey by the application of a vacuum to a number of individual but representative wells. If the wells are clean and the pumps in good condition, a vacuum ranging from 15 to 25 inches of mercury may be applied. If the sand is fairly well saturated and offers a low resistance to the movement of fluid, a sharp increase in production will be observed. These conditions practically assure the success of any repressuring operation that may follow. If, after five to ten days' application of vacuum little or no reaction is observed when the wells are known to be in good condition, it is evident that the sands offer high resistance to the movement of fluid; this will necessitate high working pressure when repressuring. The results will be doubtful although failure of the vacuum test does not necessarily imply that repressuring will fail.

Where reactions to vacuum are favorable, only low pressure and a relatively small volume of gas will be required. The application of the vacuum test method outlined above, when carried out carefully, enables an operator to determine rapidly and at low cost, the reaction to be expected from repressuring on older properties. The vacuum test on properties during the early life of the pool or when reservoir pressure is moderate, will not serve as a reliable indicator of sand conditions.

### Use of Gas and Air

Both gas and air have been widely used in repressuring operations in Texas recently, but to date nothing conclusive as to their relative value as recovery agents is available. In nearly all cases necessity governs an operator's choice between the use of air or gas as the repressuring medium. The relative value of air or gas cannot be definitely determined except by application over a long period of time and under fairly uniform operating conditions. No information is available at present of operations under these conditions. As an example somewhat approaching this condition the following account is given of four years' repressuring operations on a group of four adjoining leases in the Harmel Pool, southwest Archer County, Texas, in which air, wet gas and dry gas were applied during this period of time.

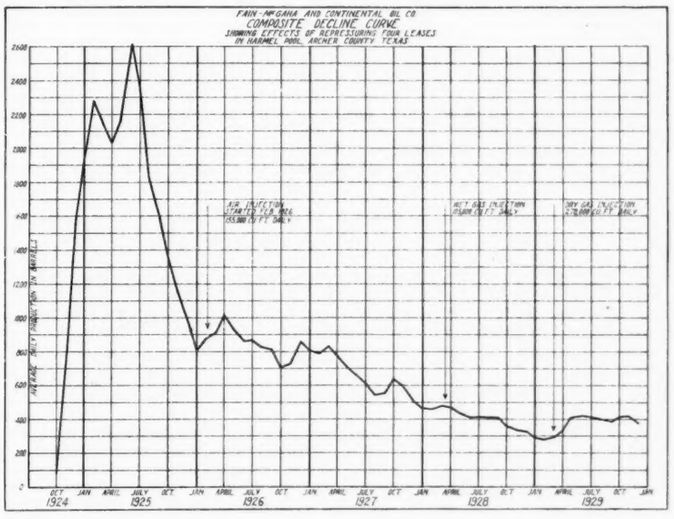
Development work on the four leases started in September, 1924, and the drilling was completed in June, 1925, no completions having been made since that time. The producing sand is found at a depth of 1,280 to 1,350 feet and varies in thickness from 6 to 20 feet. While the sand is loose in most wells, some wells indicate extremely tight sand conditions. Upon completion of both tight and loose sand wells only a small volume of gas was observed although many of them were good oil producers. A total of 68 wells were drilled on the four leases but 15 of them were abandoned during the first two years because of low production.

### Decline Curve

Referring to the attached chart, showing a composite production decline curve of the four leases, it is apparent that the decline from the production peak was very rapid, although water encroachment played no part in it. The decline was probably due to the small volume of gas and a low initial reservoir pressure. In view of these circumstances the operators decided on a repressuring program and began injecting air into the sand in February, 1926, seven months after the peak of production. Although the decline rate at this time was very rapid, the reaction was sharp and a progressive increase in production was observed during the following 90 days. By August, 1926, all four of the leases were being repressured and gave very good results.

During the 14 months following the injection of air, the production was maintained with a very low decline rate. The volume of air injected into the sand during this period was approximately 155,000 feet per day.

There were five input wells and the pressure required to force the gas into the sand varied from 10 to 45 pounds per square inch. During the latter part of 1926 and early in 1927 a progressive increase in water was noticeable but did not seem to affect the production, although corrosion of well equipment became evident. By August, 1927, corrosion became so severe and threatening that it did not seem advisable to continue with the air in spite of the good results. During the period from February, 1926, to August, 1927, little attention was required in repressuring practice and operations were routine.




In August, 1927, a careful survey of corrosion conditions was made. The output gas of each of the 41 producing wells was analyzed and air was present in all of them. The air content of the gas produced from individual wells varied from 7 per cent to as high as 95 per cent. The air content of the gas by leases varied from 46 per cent to 77 per cent. The air and salt water caused excessive corrosion of rods, tubing and casing as well as the working parts of the pump. The volume of air injected into the sand at this time was 165,000 feet daily but this amount was reduced to 130,000 feet soon afterwards.

### Recirculating Mixture

Following the survey of conditions it was decided to recirculate the air-gas mixture of the lease showing the 77 per cent air instead of continuing the injection of free air, to determine if it were not possible to filter out most of the air. This would be accomplished by returning a total of only 70 per cent of the output mixture to the sand. This process would result in a constant depletion of the volume of air in the sand and in circulation because no additional free air would be injected into the system, yet 30 per cent of the daily air content of the output gas would not be returned. All of the air-gas mixture produced from the other leases during the previous period of repressuring went to a casinghead gasoline plant after being diluted with wet gas from other leases in the pool. Recirculation of the air-gas mixture on the first lease was started November 10, 1927. At this time the air content of the output gas from this lease averaged 77 per cent.

During the following five months the air content was progressively reduced and production was maintained. The change in the air content of the output gas varied as follows: November 77 per cent, December 62 per cent, January 56 per per cent, February 51 per cent, March 46 per cent, April 41 per cent. This trend of reduction in the air content also reduced corrosion troubles. The recirculation of the wet air-gas mixture which carried 3.5 gallons of gasoline per 1,000 feet also increased the gravity of the oil 1° A.P.I. During the period from November, 1927, to April, 1928, the injection of free air continued on the other three leases.

As a result of the observed reaction to the recirculation of the air-gas mixture it was decided to do likewise with the other three leases in an effort to ultimately use the natural casinghead gas for recirculation as no other source of gas was available. In April, 1928, recirculation of the air-gas mixture was started on all leases, the first reaction to this change being a rise in the gravity of oil on all of the leases but a decline in production. The decline was due to an insufficient volume of air-gas mixture to supply both lease fuel and repressuring requirements. The total volume of the wet air-gas mixture available for return to the sand at this time was 105,000 feet. The object in using the air-gas mixture was not to increase production as much as it was to eliminate the corrosion due to the use of free air.

As the available volume of wet gas decreased during the following months, production continued to decline but corrosion disappeared when the air content was reduced below 15 per cent. During the winter of 1928-29 the volume of wet gas available for return to the sand became insufficient to give desired results. There was a progressive rise in the gravity of the oil from April, 1928, to November, 1928. The gain on different leases varied from 0.7° to 1.2° A.P.I.

### Use of Dry Gas

In March, 1929, a supply of 0.60 gravity dry gas became available in the district and it was decided to use dry gas exclusively for repressuring and deliver the wet gas to a casinghead gasoline plant for treatment. Late in March, 1929, the injection of air-gas mixtures was discontinued and dry gas was turned into the same input wells. The volume of dry gas required by the sand was greatly in excess of the wet gas required for favorable results under approximately the same conditions. Large volumes of dry gas were required to increase production and it was several months before the daily gross output of gas even equaled the daily input volume whereas during the previous three years, using air and wet gas, the output gas volume always exceeded the input gas by 30 per cent.

(Continued on Page 136)

*Before Southwestern district, A.P.I. Division of Production, at Midland, Tex., April 10.

# Operations Under Proration in Texas

## State Is Hampered by Antiquated Legislation in Effort to Match Others in Conserving Its Oil Resources

By L. E. Barrows
Division Manager, North Central Texas, The Texas Company*

While the Railroad Commission of Texas has the legal authority on its own initiative to establish and enforce proration orders for any pool or pools, after due notice of a hearing and the taking of testimony, it has not, so far, done so. The operators themselves have usually taken the initiative.

To equalize as between the operator who owns large acreage in the pool and the one whose holdings are small, all proration plans in Texas have established a relation between the total outlet of the pool and each operator's portion of that outlet based on two factors (1) amount of holdings proven for production, (2) potential ability of wells drilled to produce.

The amount of holdings in acres proven is split up into units of 20, 40 and 100 acres as the rules may provide. Of the total outlet for the pool a designated portion is allowed to proven units. This is usually 50 per cent but in the case of the Yates Pool it is 25 per cent. The smaller allowance for acreage is offset to some extent by use of the average potential.

The balance of the market outlet is apportioned to each operator based on the ability of his wells to produce and is known as the "potential allowance." This potential allowance is the weak feature of the plan since it has, so far, only been determined with reasonable accuracy by actually producing each well wide open at stated intervals, usually each 30 days, for a given period of time. This procedure is detrimental to the fundamental purposes underlying the entire proration plan, as it tends to create underground and aboveground conditions which the plan seeks to avoid.

On May 25, 1929, the writer suggested that a committee of petroleum engineers, representing the Hendricks Pool operators, study the problem of correctly determining a well's potential without the necessity of producing it wide open and suggested the possibility of a composite curve based on field data available and expressing a relation between bottom hole pressure and potential capacity with proper allowance for size of casing or tubing, and known water conditions. This was not found feasible in that pool but it is gratifying to know that something of a similar nature may be applied in the Yates Pool.

### Potential Allowance

This much discussed potential allowance may be applied to each unit either as the average potential of the wells on the unit (as in Yates and Darst Creek) or as the sum of the potential of all the wells on the unit (as in Hendricks and Howard-Glasscock Pools) each fixing the potential allowance of the unit by its relation to the total potential allowance of the pool. The unit's total allowance then is the sum of its unit or acreage allowance and its potential allowance, and each unit stands by itself.

According to the method used in the Hendricks Pool of Winkler County, one operator may have 50 units, the sum total allowance fixing his part of the pool's outlet. Another may have only a fractional part of a unit, in which case his unit allowance is proportional to the fractional part of the unit which he holds, however, his potential allowance would be determined by the ratio of the potential of his wells to the potential of the pool and would not be affected by the size of the lease. The plan is fair to all and is successful when all unselfishly live up to the rules. Unfortunately all do not do so as might be expected and voluntary agreements have not lasted long.

Selfishness plays a big part in the lives of most of us. Personal gain at the expense of our neighbors is not unknown to many of us. Overzealousness on the part of field employes in their interpretation of loyalty to their employer is not surprising in this day of intense competition. The employer himself, whether he be individual operator or company executive, is not to be absolved. The umpire is without authority; the plan has been by voluntary agreement, perhaps with mental reservations in some cases. Our obligations are moral ones and our morals are weakened by personal considerations.

Some have not subscribed to the idea from the start and their operations have tended to disrupt the plan where their neighbors are affected. Concessions have been granted to equalize unfair conditions and these have spread. Some have conscientiously refused to subscribe because of contracts, lease obligations or for reasons of legality. At any rate the voluntary plan wobbles and we need the influence of the policeman on the corner.

The remedy lies in an order from the Railroad Commission establishing proration rules and regulations for the pool.

It is manifest that the umpire and his limited force cannot personally check the operations of every operator on every lease and unit, in a field containing several hundred units and 500 or 600 wells. He must, of necessity, rely upon the reports made to him daily by the operators and his best check on their accuracy is through the co-operation of the buyers, represented by pipe line run statements.

The great majority of the operators who have subscribed to a proration plan adhere strictly to its regulations, some even "bending over backward" in a strict compliance when conditions are such as to warrant some deviation in their case.

It has been the practice in all the pools where proration has been in effect to make certain allowances in favor of small operators with limited acreage. These have, as a rule, not been for the purpose of correcting unfair conditions due to the inefficiency of the plan but rather an attempt to partially satisfy the operator in his selfish desire and to hold the plan intact.

### Attempted Evasions

There has been evidence that reports handed to the umpire do not correspond with the reports made to the operating office of some companies. There have been instances where the umpire has been misled in the amount of back pressure maintained upon a well, or wells, and as to the amount of water they were making.

Apparently intentional errors have been made in favor of the producer when gauging tanks, indicating the potential capacity of wells. Two wells have been connected together in such a way as to indicate the potential capacity of the one under test to be greater than its correct capacity.

Oil has been run to storage tanks unknown to the umpire and in violation of proration rules, such oil being in excess of the allowable production of the unit. The production of one unit capable of making more than its allowance has, in part, been run into the tanks on another unit which was not capable of making its allowance.

An examination of county records indicates that there may have been some incentive on the part of an operator producing in excess of his allowance by reason of he and his associates owning royalty interests in adjoining tracts and his action forced the adjoining tracts to also overproduce in an attempt to equalize a condition which could not be controlled because of legal limitations in the law at that time.

Pumping wells being tested under proration rules have been speeded up during the period of their test, thus causing them to indicate a production in excess of their normal capacity and thus securing a greater percentage of allowed production.

These and many other violations of the spirit and the letter of proration have been made but the vigilance of the umpire and his assistants, together with the moral support of the majority of the operators, has quickly corrected these conditions.

### Benefits Under Proration

It has been said by individual operators that proration plans are not for the best interest of the small operator but serve only the large operator in permitting him to stabilize his operations and proceed in an orderly manner at the expense of his smaller neighbor. One individual operator told me that he did not want to see the industry stabilized, that he profited most by its wide fluctuations, by the rush and scramble which followed new discoveries, as he could get underway quicker and take advantage of such opportunities as presented themselves, producing and selling the oil before the excess production had a chance to affect the prices and that when prices were depressed, as a result of this flush production, he went fishing and waited for another opportunity.

An independent refiner told me that he also welcomed periods of depression and low prices, which enabled him to contract for and purchase crude advantageously, and that his profits were greater even in the fact of a depressed market price for refined products.

Such views are purely selfish and personal and are not to be considered in any plan for the greatest good for the greatest number.

Proration gives time for careful and scientific study of conditions in the field and allows for corrective measures to be applied which will insure production of the ultimate barrel of oil at least cost. It conserves the gas pressure, reduces the gas-oil ratio thereby preventing waste, both physical and economical. Boom conditions, with all of their undesirable features, which have in the past been generally incident to new discoveries, are practically eliminated and supply houses, as well as labor, including contractors, have assurance of a fairly steady and uniform business which leads to stability.

The small operator benefits at less cost to him by the experience and practices of his larger neighbor, brought about by study and research and, therefore, the efficiency of operation for the small operator, with his limited resources, is on the same plane as that of his larger neighbor.

The royalty interest benefits in proportion due to the increased recovery, his only possible objection being that the returns are spread out over a longer period. He is compensated by a higher price for his interest.

These benefits have been particularly

*Before Southwestern District, A.P.I. Division of Production, at Midland, Tex., April, 1930.

## PETROLEUM, PETROLEUM PRODUCTS, NATURAL GASOLINE, FEBRUARY, 1930*

Crude Petroleum: According to reports received by the Bureau of Mines, Department of Commerce, the production of crude petroleum in the United States during February, 1930, amounted to 74,427,000 bbls., a daily average of 2,658,000 bbls. This represents an increase in daily average output over the previous month of 95,000 bbls.

Practically all of the major districts and states showed an increased output in February; the most notable exception being Seminole, the daily production of which declined from 291,000 bbls. in January to 264,000 bbls. in February. The daily output of the two leading producing states, Texas and California, increased 38,000 and 37,000 bbls., respectively, over January, these being the two largest factors in the gain in national total.

Stocks of crude petroleum east of California totaled 381,306,000 bbls. at the end of the month, an increase of approximately 1,500,000 over the January figure. The major portion of this increase occurred in refinery stocks, which rose from 44,508,000 bbls. on February 1 to 45,578,000 bbls. on hand at the end of the month. Stocks of light crude in California increased about 2,300,000 bbls., heavy crude and fuel oil about 600,000 bbls.

Stocks of refined products increased approximately 1,000,000 bbls. during the month, which, with the total increase in crude stocks of about 4,400,000, raised the grand total stocks of all oils to 692,878,000 bbls., a new high figure. This indicated daily domestic demand for all oils in February was 2,473,000 bbls. as compared with 2,405,000 bbls. in January and with 2,389,000 bbls. a year ago. For February, 1930, the daily average production of the raw materials, crude, natural gasoline, and benzol, exceeded the daily indicated domestic demand of all oils by 345,000 bbls. as compared with an excess of 456,000 bbls. in February, 1929.

Refined Products: Runs to still of crude petroleum during February amount to 72,414,000 bbls., which, though a material decrease from the total of the previous month, represents the same daily average. Runs to stills of foreign crude continued to decline.

Motor fuel production amounted to 33,949,000 bbls., a daily average of 1,212,000 bbls. as compared with 1,182,000 bbls. the previous month. Daily average imports and exports were practically unchanged but the daily indicated domestic demand rose from 830,000 bbls. in January to 947,000 bbls. in February, an increase of 14 per cent. Stocks of motor fuel on February 28 totaled 53,229,000 bbls., an increase over the January stocks of 3,553,000 bbls. At the current rate of total demand, these stocks (53,229,000) represent 48 days' supply as compared with 49 days' supply on hand a month ago and 48 days' supply on hand a year ago.

The refinery data of this report were compiled from schedules of 342 refineries, with an aggregate daily recorded crude-oil capacity of 3,635,000 bbls., covering, as far as the bureau is able to determine, all operations during February. These refineries operated at 71 per cent of their recorded capacity, given above, as compared with 345 refineries, operating at 71 per cent of their capacity in January.

*Prepared under the supervision of G. R. Hopkins, Petroleum Economics Division, E. B. Swanson, acting chief economist, Petroleum Economics Division.

emphasized in the Yates Pool of Pecos County, Texas, where with a total recovery of approximately one-tenth of the estimated ultimate production, the operators probably know more about their wells and general subsurface conditions than operators in most fields, not under such proration rules, know when 75 per cent of the oil has been removed.

Gas-oil ratios are being continually lowered and are approaching the ideal condition which is production of gas equal to that dissolved in the oil at the pressure existing in the well.

### Legality of Proration

The foundation for legislative action along the lines of proration unitization and conservation is a consideration of the economic factors relating to the development of this natural resource which is irreplaceable and should be produced in such a way as to render the most service to mankind.

The Federal Farm Loan Board recommends that the farmer plant a specified amount of acreage for a given product to make supply and demand meet. The oil industry is second only to agriculture in money value and importance to the public.

Why should there be any hesitation in regulating its supply to demand and permit a fair price to its producer? Is there any reason why it should be made illegal to do so with the precedent established in agriculture or on a common sense basis?

The American Petroleum Institute's Committee on World Conservation of Petroleum recommended early in 1929 that the production for that year be held to the 1928 level, and based its recommendation upon known conditions and accurate forecasts, which were fully supported by the excess production of 1929 over 1928 and its relation to demand. It should be noted that of this excess over requirements California and Texas alone accounted for 97 per cent and Texas' portion of the whole overproduction for 1929 was about 40 per cent.

The State of New Mexico has legalized pooling agreements, under certain conditions which are not burdensome.

The State of Oklahoma, under its conservation laws and functioning through its Corporation Commission, is maintaining, at this time, real proration, limiting supply to demand and thus effecting conservation in its truest sense and without the necessity of first proving physical waste to exist.

After weathering attacks in the courts, the California gas conservation law bids fair to accomplish the purpose for which it was designed and bring about a satisfactory relation between supply and demand in that State.

### Texas Hampered

Tabulated figures for the years 1928 and 1929 and a portion of 1930 indicate the relative importance of the production from the States of California, Oklahoma and Texas when considering the total production of the United States and of the world.

California's production for February, 1920, is approximately 56,000 bbls. less per day than the daily average of 1929 and it is believed March, 1930, figures for California will show a much nearer approach to their present goal of 610,000 bbls. daily, as the determined efforts of the operators, assisted by the state and federal authorities, are not to be denied and they have already had a portion of their reward.

Oklahoma's figures for February, 1930, show a reduction of approximately 65,000 bbls. daily from the daily average of 1929 and in that State also the situation seems to be well in hand.

Texas, however, shows an increase in the daily production of February, 1930, over the daily average for 1929 of approximately 32,000 bbls. and in turn the daily production of Texas in 1929 exceeded the daily average for 1928 by approximately 117,000 bbls.

Texas, alone, with its stringent antitrust laws enacted years ago when conditions of modern progressive business methods were unknown, is being hampered in doing its part to bring about a more satisfactory condition in our industry.

The present statutes of Texas give the Railroad Commission considerable authority in preventing physical waste and it now has several means of enforcing its orders. It can punish for contempts; it can impose heavy penalties for each day of violations of its rules; it can enjoin, through the attorney general, any operator or owner of a well or a lease from violating its orders.

The act regulating pipe lines, together with the rules and regulations of the commission under that act, applying to common carriers, serves as an additional instrument for the commission to enforce its proration orders, and in the past the commission has made use of this means.

Opinion is divided among attorneys in this State upon the question of the authority of the Railroad Commission of Texas, under the existing conservation laws, to make and enforce such rules and regulations as have been adopted governing the production of crude oil and natural gas in Hendricks and other pools, although the attorney general ruled the Hendricks proration order of the commission to be a lawful one.

The antitrust laws of Texas are broad and it is fear of their violation which has caused a serious doubt as to the legality of voluntary conservation agreements among operators even though approved by the commission unless the control is in the commission and the plan be the result of its specific orders, as it is charged with the duty and power of administrating the conservation laws upon which we rely for authority to prorate production. One difficulty is in the language and probable meaning of the present statutes which bind the commission to consider only physical waste, both above and below ground, and expressly forbids consideration of economic waste.

The only way to prevent waste is to remove the causes which lead to it. If waste must be proven before an order can be legally issued then waste has not been prevented. It is usually difficult to prove that waste will occur unless something is done to prevent it.

This State, one of the chief offenders in the past in the overproduction of crude oil, has, through its operators, realized for some time the undesirable part it is playing and has made repeated efforts to correct the condition but without success, because of its fear of antitrust laws and because of its doubt as to the legality of proration agreements, even though sanctioned by the Railroad Commission.

As a result it has suffered and has caused others to suffer because of its influence in bringing about a condition of low prices incident to production in excess of demand. This condition affects not alone the operator engaged in producing oil with the hope that he may do so at a profit, and certainly no business is worthy of the name which does not have as its goal a reasonable profit. It affects also the industrial welfare of this State and its people in every walk of life.

It is believed by those qualified to pass judgment, and who are not influenced by personal motives, that the solution of the Texas problems lie in adequate legislation which would legalize co-operative agreements leading to practical conservation and which would remove the doubt which now exists as to the scope of the present statutes.

All discussions in this matter have led to this one point and an effort has been made to introduce at a recent session of the legislature a bill which would bring this about with proper control and supervision by the Railroad Commission. It was not submitted to the legislature and, therefore, can not be considered at a special session.

There was submitted and passed, however, the so-called pipe line bill which may, in its enforcement, bring about proration in each pool throughout the State.

The economic law of supply and demand which the commission may not lawfully consider except in so far as physical waste is involved is a factor which may not be ignored in consideration of the broad subject of conservation and waste. The Yates Pool was originally prorated on the basis of the pipe line outlet, which at first was limited. That is regulation of supply to demand. It prevented the building of storage which would have resulted in waste above ground of the light fractions of the oil due to evaporation. That would have been both physical and economic waste.

Proration has already saved the State many thousands of barrels of a valuable resource which is irreplaceable and which otherwise would have been lost, promoting more orderly and efficient methods, eliminating physical and economic waste and requires, at this time, adequate legislation to permit of the full utilization of its possibilities.

## GOVERNMENT DATA REFLECT IMPROVEMENT

(Continued from Page 50)

year. Imports of fuel oil and gas oil used both as fuel and as cracking stock for domestic refineries increased from 801,000 bbls. the first two months of 1929 to 4,909,000 bbls. the first two months of this year. Thus the import situation so far as volume is concerned has not changed materially, the decline in raw material being offset by increases in refined products.

### Crude Oil Demand

From the consumption side, total crude oil demand was 159,312,000 bbls. the first two months of this year, an increase of 1,045,000 or 0.6 per cent, over the same period in 1929. Had crude oil runs to stills been curtailed to bring the gasoline supply more in line with the demand, it is probable that the demand the first two months of 1930 would have been less than the same period in 1929.

For the two periods under consideration the 1930 situation was better than in 1929 as shown by the fact that the first two months of this year 4,347,000 bbls. of crude oil were added to storage which compares with an increase of 14,496,000 bbls. for the same period in 1929. Crude oil stocks on February 28 were 33,389,000 bbls. or 6.7 per cent greater than on the same date in 1929. As previously explained, however, the bulk of this increase came in the spring and summer months of 1929.

### Gasoline Situation

The efforts being made by refiners to improve the statistical situation of their principal product is reflected in the comparison which shows that, while gasoline stocks at the start of the year were 10,000,000 bbls. greater than the year previous, the increase was 7,500,000 bbls. on the last day of February. These stocks were considered still too large for a healthy market situation and there has been considerable agitation to further curtail operations so that on May 1 the stocks will not be any greater than they were on May 1, 1929.

The improved stock situation is accounted for by the fact that while 13,319,000 bbls. of gasoline were added to storage the first two months of 1929, the excess supplies the first two months of this year were 10,097,000 bbls. The fact that gasoline demand ran ahead of expectations accounts for a large part of this improvement. As shown in the table the demand was 8,672,000 bbls. or 16 per cent greater than the first two months of 1929. This, of course, is based on shipments from refineries and not actual consumption and shipments in the spring months may drop off so that this exceptionally large increase may be reduced. At the same time the data may point to another record increase in gasoline consumption. The gain of over 50,000,000 bbls. last year was much larger than expected and many have predicted that the 1930 gain would return to a more normal basis of 35,000,000 bbls. or approximately 10 per cent.

Aside from the Government data, the reports of individual companies were usually favorable in regard to gasoline consumption except in areas where weather conditions were unfavorable. Basing their views on developments for the first three months of this year there are many prophets who are now predicting a 1930 gain as large as that of 1929. The more conservative agree that it is too early to predict conditions over the remainder of the year but they are confident of at least a normal increase in demand. Exports shipments which lagged the latter part of 1929 picked up the first two months and were 21.3 per cent greater the first two months of 1930.

### Kerosene

It will be noted in the table that the first two months of 1930 was a period of decreases in kerosene except for stocks which on February 28 were 355,000 bbls. or 4.3 per cent greater than on the same date in 1929. Domestic production and imports were less than they were a year ago and the same is true of domestic consumption and exports. The first two months of the year are normally a period in which the demand for kerosene is greater than the supply but this year the excess demand was substantially less than last year.

This is a product for which apparently there will continue to be a lessened demand. Fortunately there has been a similar trend in production due to larger gasoline yields and the fact that much of the new crude oil supply is not desirable from the standpoint of refining kerosene.

### Lubricating Oil

While the total demand for lubricating oil decreased 5.6 per cent the first two months of the year and the supply increased 2.8 per cent, the relatively high prices which prevailed last year for the paraffin base lubricants has stimulated production and with little or no increase in demand to be expected, it is possible that some curtailment of output will become necessary if healthy markets are to be maintained.

The Government has again changed its method of compiling statistics on fuel oil and gas oil and comparable data are not available on demand. In general the stock situation, particularly east of California, has shown substantial improvement in recent months. The future is directly dependent on the crude oil situation. Excessive supplies of the latter inevitably result in large accumulations of fuel oil. At present with the large demand for cracking stock the outlook is favorable for this product following a period of low prices extending over two years.

### Petroleum Wax

About all that can be said about the wax situation based on the data for the first two months is that it is not quite as bad as it was last year for the same period. The excess supply last year for the first two months was 34 per cent and this year it was 25.8 per cent. The domestic production and imports were slightly less this year. But an increase in domestic demand was offset by a decrease in export shipments so the price situation has not improved materially.

## V. O. C. AMALGAMATION APPROVES CURTAILMENT

Amalgamation of V. O. C. Holding Corp. with Venezuelan Oil Concessions, Ltd., through exchange of stock on an equivalent basis, has been approved by stockholders. Creation of an additional 1,800,000 ordinary shares of £1 par of the concessions company was also approved. The new stock will be issued to shareholders on the basis of one new share at par for every three shares held, either preference or ordinary.

Viscount Bearsted, chairman of both companies, stated that the new capital is required to replace, for dividend purposes, the profits utilized for capital expenditures during 1929 and to provide working capital. Capital expenditure in 3½ years to the close of 1929 totaled over £4,000,000.

The board is of the opinion that the important position of the company as a producer can be maintained. It also favors a policy of rationalization of the oil industry and has recently reduced its drilling program, as further expansion of production at the moment would be injurious to efforts now being made for stabilization of crude to a point consistent with consumption.

# Pipe Line Construction News

## UNEXPECTED REVISION OF DISCOUNT CARDS

By B. E. V. Luty

PITTSBURGH, Pa., Apr. 7.—The first revision of discount cards on standard pipe, line pipe, outside diameter pipe Boston casing and price lists of oil country goods in seven years has just been made by the National Tube Co. Its new cards and lists, distributed in the past few days, are dated April 1 and other pipe producers are of course following.

Card discounts are increased uniformly two points. As the standard price lists, of January 1, 1913, have prices per foot equal to about 10 cents a pound, a change of two points in the discount is equal to about $4 per net ton. Oil country goods lists carry net prices and are revised substantially the same as pipe.

The revision was quite unexpected. The cards and lists supplanted are those of April 19, 1923, except that in September, 1924, Lorain was made a basing point with the same figures at Pittsburgh and Chicago a basing point with discounts two points less than Lorain and Pittsburgh. While the cards were unchanged for almost seven years there were some variations in the trimmings or preferentials and it is to be inferred that certain extra preferentials over those accorded in 1923 will now be eliminated so that the reduction in actual market prices will not be as great as $4 a ton.

On standard steel pipe the basing discount, Pittsburgh and Lorain, changes from 62 to 64 per cent, this being on 1 to 3-inch butt weld, the greatest discount for any size, Chicago becoming 62 per cent. On line pipe the new discounts, Pittsburgh, range from 63 per cent on 2½ and 3-inch butt weld to 54 per cent on 11 and 12-inch lap weld.

Covering news items recently printed and giving additional information the A. O. Smith Corp., Milwaukee, has issued a statement that in three years it secured orders for 130,000 miles of gas and oil line pipe with a value approximating $10,000,000, and that it is looking for the early release of orders aggregating twice this recent tonnage. Included in the orders already taken are the Pure Oil Co. line, 190 miles, the Moody-Seagraves system line, 600 miles, and the Montana-Dakota Power & Light Co. line through Montana and Dakota, 281 miles, this last order having been booked March 26. It will be welded in the field. The company's pipe mill is operating three shifts.

### VANCOUVER PIPE LINE

CHATHAM, Ontario, Apr. 7.—Construction of a pipe line from Alberta, to Vancouver, British Columbia, to deliver natural gas from the Turner Valley Field was suggested in a recent address by C. E. Eldridge, vice president of the British Columbia Chamber of Commerce. He suggested the possibility of developing an important chemical industry by the use of this cheap fuel, as well as the manufacture of nitrogen fertilizer on an extensive scale.

### WICHITA COUNTY EXTENSION

The Sinclair Pipe Line Co. has constructed a 4-inch line from its Electra station into the K-M-A Pool, Wichita County, Texas, making a 10-mile extension, and will run crude from Arkansas Fuel & Gas Co.'s producing wells in this pool. The Texas Pipe Line Co. and Pure Oil Pipe Line Co. have been running the production.

## PREPARATION AND BURIAL PLACES FOR COATING TEST SPECIMENS

By Dr. Scott Ewing
A.G.A. Research Associate, Bureau of Standards*

The investigation of protective coatings for pipe lines, which the American Gas Association and Bureau of Standards have made possible, started one year ago. Numerous organizations and individuals who are interested in these tests are anxious to know what coatings are being tested and where the specimens have been buried. For this reason it seems desirable to describe the coatings in as detailed a manner as possible with the information at hand, and to give a general description of the places of burial.

The work of preparing a large number of specimens, such as has been done in the investigation sponsored by the A.G.A., is expensive. It is entirely proper, therefore, to list some of the advantages of this method and show why the expenditure is justified. (1) There is no question as to how the coating was applied. The coating manufacturer has every advantage it is possible to give him so that failure cannot be easily attributed to faulty application. (2) Samples of the material are obtained at the time of application so that there is no question as to the nature of the original material. (3) The pipes were bright so that if rust appears on them later, it certainly has formed since the coating was applied. (4) The coatings do not have to be inspected in the bottom of a dark trench but will be brought to the laboratory where they can be referred to at any time in case any question should arise. In the laboratory they can be carefully studied so that it should be possible to get definite information as to just what happened to the coating while it was underground. (5) Laboratory tests can be made on the coatings with the object of developing a satisfactory method of test which may be applied to any coating at any future time. (6) By burying specimens we have wide choice of locations for burial and we can bury the specimens in the particular soils we are interested in, thus getting direct comparisons between different coatings in the same soils and the same coatings in different soils. The one essential thing that must be obtained in any investigation is adequate data. If the conclusions are to be definite and reliable, they must be based upon sufficient data so that one is not misled by accidental circumstances. Such circumstances are especially apt to occur in studying corrosion and its prevention.

There are hundreds of miles of coated pipe lines in the field. Inspection of these lines is perhaps the most direct and apparently the simplest way of obtaining information as to the merits of the various coatings, but some of the needed information cannot be obtained in this way. Dr. Gordon N. Scott, the American Petroleum Institute research associate at the Bureau of Standards, has spent over a year in just this kind of work and he will give you a summary of his findings and the merits of this method.

**Methods of Application of Coatings**

All of the more important coating manufacturers were invited to enter the test and submit as many coatings as they desired. Among other things the manufacturers were required to pay a fee of $200 for each coating they wished to test. This money is to be used to help defray those expenses which vary with the number of coatings such as cost of application, freight and cost of cleaning and rating the specimens. Fixed costs, such as salary and traveling expenses, are to be paid by the American Gas Association. This fee requirement served two distinct purposes. (1) It limited the number of coatings to those in which the manufacturers had considerable faith. (2) It provided a means of preventing the American Gas Association and the Bureau of Standards from being overburdened with the expense of the test.

Manufacturers shipped their coating material to the galvanizing plant of the National Tube Co.; a schedule was arranged and each manufacturer's representative came there to supervise the application of his coating. The coatings were applied to shot-blasted pipes which were stored in a bin of lime to prevent them from rusting.

**Coating and Methods of Application**

Table 1 is a list of the coatings in the test and some data concerning them. For the purpose of describing them in more detail the coatings have been divided into six classes in the following paragraphs:

a. Bituminous enamels are materials defined as having 15-40 per cent by weight of finely divided mineral fillers. Coatings which are ordinarily called enamels consist of a priming coat of a solution of bituminous substance and a coating of the enamel proper applied with a sling. Coatings B, H, R, S, W and WR (Table 1) fall into this class. The descriptions of these materials, as submitted by the manufacturers, show that they are all different, both as to the kind of filler added and as to the physical properties of the product. All of these coatings had an electrical resistance greater than 1 megohm between the pipe and the water into which the specimen was dipped. The method of determining the resistance of the coating will be described later.

b. Asphalt emulsions consist of a liquid (water) phase in which the asphalt is dispersed by means of some emulsifying agent. The asphalt emulsions are all applied cold and most of the water evaporates, leaving the asphalt on the pipe. Coatings E, EE, F, FF and G are in this class. Coating E contains asbestos fiber, EE had portland cement dusted on it before the water evaporated and FF had portland cement mixed with the coating material before it was applied. E, FF and G were applied with a brush, EE was applied by dipping full length pipe and F by dipping 2-foot lengths of pipe in the emulsion. All of these coatings had a comparatively low electrical resistance when the cans were placed on them, and they appeared to conduct the current at every point.

c. Cutbacks consist of the bituminous substance dissolved in a light petroleum distillate or coal tar solvent which evaporates when the coating is applied. Coatings K, L, M and SS belong in this class. All of them were applied cold with a brush. Coatings K and SS have coal tar base material with a filler, L has asphalt base material with asbestos fiber in it and M has asphalt base material and no filler. They all consist of a priming coat and one or two outer coats of thicker material. Most of these materials dry rather slowly from the outer surface inward, and are not hard enough throughout to resist slight abrasions after several days. They are rather thin and in most cases if applied to greater thickness the material runs off the pipe. All of the cutbacks except L showed numerous leaks with the electrical test so that their resistance is rather low. Coating L dried to a rather hard, tough coating in one day and showed only five leaks in the 60 specimens. These leaks were repaired.

**Subdivisions**

d. The felt reinforced coatings can best be described by further subdividing this class into four groups, based upon the methods that were used in their application. Coating BB was applied by hand, the pipe being rotated on saw horses while the felt was wrapped and sealed to the pipe by pouring molten pitch on it. Similar operation was used to put on the Kraft paper.

Coatings X and P were applied with the Pabco machine. The pipes were driven spirally through the machine and the felt was drawn through a bath of hot asphalt and on to the primed pipe. If

(Continued on Page 135)

*Before American Gas Association, Distribution Conference, St. Louis, Mo., April, 1930.

## KANSAS TO NEBRASKA LINE WILL BE LAID

An 8-inch pipe line from Lyons, Kans., to Superior, Neb., is to be constructed immediately by the Cities Service Gas Co., an Empire subsidiary. The distance is 116 miles and the cost, including two compressor stations, will be approximately $1,500,000.

The line will be an extension of the Cities Service 8-inch line from Hutchinson to Lyons, a distance of 29 miles. It will carry natural gas from the Texas Panhandle and Oklahoma City fields, and will pass through Ellsworth, Lincoln, Beloit and Mankato. Laterals will extend to Sylvan Grove, Luray, Osborne, Smith Center and other northern Kansas and southern Nebraska towns.

All natural gas used in serving this new Cities Service territory will pass through the company's Wichita compressor station and natural gasoline plant.

Material for the line has been purchased and its construction will be completed by fall.

### N. W. UTILITIES PROGRAM

CHATHAM, Ontario, Apr. 7.—Details have been made public of the 1930 program of Northwestern Utilities, Ltd., which supplies gas to Edmonton from the Viking Field. Three wells will be drilled in the Viking Field this season at an estimated cost of $84,000. Two rigs were fitted up last fall, and drilling operations will be started early this spring. About $8,000 will be spent in additional field lines.

The company now has 16 producing wells and two drilled for it by the Hudson's Bay-Marland Oil Co., all in the Viking Field, with an aggregate open flow capacity around 89,000,000 feet a day. In addition to the actual drilling, a sum of $50,000 is included in the company's 1930 budget for geological exploratory work.

The company's main pipe line from Viking to Holden, a distance of approximately 20 miles, was last year duplicated, using 12¾-inch pipe. This year duplication will be continued from Holden to Ryley, 9 miles, at an estimated cost of $130,000. The work will be done by the company, operations being started about July 1 under supervision of C. H. Spencer, superintendent of construction. The new line is scheduled to be completed inside 30 days. Utilizing the two pipe lines will enable the field pressure for peak loads to be reduced from 350 to 325 pounds, the pressure at Edmonton remaining at 100 pounds. Some $33,000 will be spent in extending the distribution system in Edmonton. The total program for the year is estimated at $425,000.

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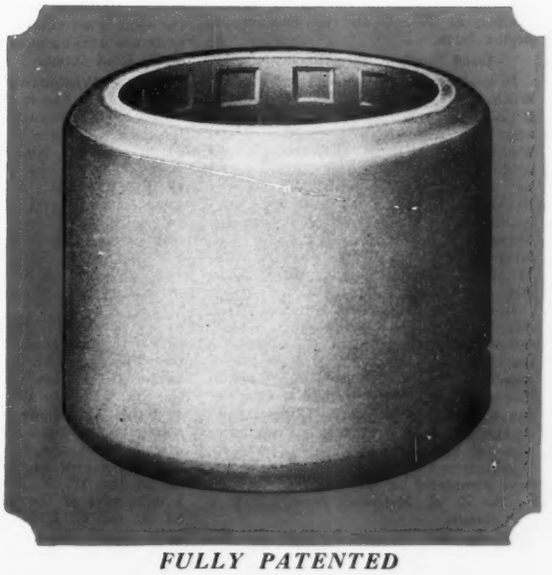


*FULLY PATENTED*

# Unsatisfactory Week in Eastern Area

## Fewer Wells Completed and Few Better Than Average. Recent Efforts to Find New Territory in West Virginia Disappointing

By D. S. Wakenight
*Staff Correspondent, Eastern Fields*

PITTSBURGH, Pa., Apr. 7.—Development work in the eastern fields during the past week was unsatisfactory. Fewer wells were completed and only a few better than the average. The recent efforts to find strictly new producing territory in West Virginia have proved failures and at the present time no wildcats are starting. The gas companies are less active as the summer approaches when the demand will be less. Drilling old wells deeper, cleaning out and shooting is quite a feature. In most instances it brings a small increase in production.

### SOUTHEAST OHIO

In Section 13, Fallsbury Township, Licking County, the Preston Oil Co. has completed and shot in the Clinton sand No. 2 on the Wallace Davidson. It produced 130 bbls. the first 24 hours. In the NE Section 13, Monroe Township, Harrison County, W. E. Heavlin completed in the Berea grit a second test on the W. E. Heavlin farm. It is a 2-bbl. pumper.

In the NW Section 3, Clay Township, Muskingum County, Noah Andrews and others completed a test on the State of Ohio lands. It produced 90 bbls. the first 24 hours after shot in the Clinton sand. In Section 3, Wayne Township, the Atha Oil Co.'s test on the W. L. Morehead farm is a gasser in the Clinton sand. In Perry Township, the Wittmer Oil & Gas Properties Co. has a gasser on the John Thomas farm. In the same county various companies are drilling seven tests and have two rigs completed on as many different farms. In Washington Township, the Ohio Fuel Gas Co. is due in the sand on the Roy C. Haines farm. In Section 12, Perry Township, Longfellow and others are due in the Niagara lime on the L. B. Jackson farm. In Brush Creek Township, the Fritz Oil Co. is due in the Clinton sand on the H. T. Swingle farm.

In Perry Township, Licking County, the Pure Oil Co.'s No. 6 on the Hoover Brothers farm is a 12-bbl. pumper. In Section 5, same township, the Hope Construction & Refining Co. has a 10-bbl. pumper at No. 6 on the Samuel M. Rector farm.

#### Good Shallow Sand Producer

In Section 33, Independence Township, Washington County, Herlan Schraamm & Co. got a good shallow sand producer when they drilled No. 15 on the J. H. Ward farm into the Mitchell sand. It produced 75 bbls. the first 24 hours and has not been shot. In the SE Section 10, Wheeling Township, Guernsey County, the Kemro Oil Co. completed in the Niagara lime a test on the J. W. Fowler farm. It produced 50 bbls. the first 24 hours from a total depth of 3,640 feet.

In the NE Section 13, Clayton Township, Perry County, Ralph Brothers, Inc. completed in the Clinton sand a test on the C. F. LaFollette farm. It is a light gasser. In the NE Section 19, Harrison Township, the S. & W. Oil & Gas Co. has a light gasser in the Clinton sand on the W. L. Brown farm. Four miles east of Chesterhill, Wesley Township, Washington County, W. E. Burns & Co. have completed in the Salt sand a test on the E. M. McGinnis farm. It is a fair gasser.

In the SW Section 3, Clay district, Muskingum County, Wallsmith & Webb have completed in the Clinton sand a test on the A. F. Earley farm. It is a light gasser showing a little oil. It will be shot later and may make a light oil producer. In Section 17, Ward Township, Hocking County, the Preston Oil Co.'s No. 1,320 on the Sunday Creek Coal Co.'s property produced 65 bbls. the first 24 hours after completed and shot in the Clinton sand. In the same township, the same company's No. 1,386 on the same property is a 30-bbl. producer in the same formation. The same company is due in the Clinton sand at No. 1,378.

#### Hocking County

In Washington Township, Hocking County, the Pure Oil Co. has a rig up on the Elmer Harst farm. In the same township, the Pure Oil Co. is due in the Clinton sand at a second test on the James Plansharp farm. In Washington Township, Tuscarawas County, the Gordon Oil Co. has a rig up on the Thomas Shearer farm and is drilling tests on the Sarah Ripley, James Walter and James Carroll farms. In the same township, the Capitol Oil Co. is due in the Clinton sand at No. 2 and rigging up at No. 3 on the C. H. and M. A. Falson farm. In Washington Township, the Gordon Oil Co. has started to drill a second test on the Ralph Huffman farm and is moving rig timbers to a location for No. 3 on the same farm.

In Hardy Township, Holmes County, the East Ohio Gas Co.'s test on the Melissa Gamble farm is a gasser. In the same township, the Preston Oil Co.'s No. 3 on the O. C. Close farm is a duster. In Monroe Township, the Arkansas Fuel Oil Co. has a 15-bbl. pumper at No. 6 on the William Miller farm.

In Hopewell Township, Muskingum County, the Preston Oil Co. and the Hope Construction & Refining Co. are drilling on the Millie Varner and George Wilkens farms. In Licking Township, the Wehrle Co. is drilling on the D. E. Wells farm. In Hanover Township, Licking County, the Hope Construction & Refining Co. has a rig up on the Minor-O'Bannon farm. In Bowling Green Township, Licking County, the Midland Oil Co.'s second test on the George M. Bowers farm produced 30 bbls. the first 48 hours after completed and shot in the Clinton sand. In Marion Township, Noble County, Harry Clymer and others have a gasser on the F. G. Cleveland farm. In Olive and Center Townships, the Ohio Fuel Gas Co. and a local company are drilling on the Abbie Davis and J. T. Reed farms.

#### Washington County

On Fifteen Creek, Section 10, Liberty Township, Washington County, C. E. Smith & Co. have a gasser in the Big Injun sand at No. 8 on the William Gerhart farm. In the SW Section 3, Clay Township, Muskingum County, Crowley, Carr and others have a light gasser in the Clinton sand at a second test on the Phoebe Frash farm. In the SW Section 10, Sutton Township, Meigs County, Koontz & Strohman have started to drill on the Authur Beagle farm.

### WEST VIRGINIA

On the waters of Charleys Creek, Grant district, Cabell County, the Harshbarger Oil & Gas Co. has drilled from the Big Lime to the Berea grit No. 4 on the R. C. Kilgore farm. It is a small gasser in the Berea grit. On Dry Creek, same district, the Larner Gas Co. completed and shot in the Brown shale No. 99 on the W. N. Keaton farm. It is 1 mile west of the same company's No. 81 on the G. Reynolds farm and is a gasser good for 400,000 feet.

In Church district, Wetzel County, the Carnegie Natural Gas Co. has a 20-bbl. pumper in the Big Injun sand at No. 12 on the Alice Edgell farm. In the same district, the Pittsburgh & West Virginia Gas Co. has a gasser at No. 3 on the Corlina Hibbs farm.

On Sugar Tree Fork, Union district, Lincoln County, the South Penn Oil Co. has completed a very light pumper in the Berea grit on the John W. Egnor heirs' farm. On Plum Run, Murphy district, Ritchie County, W. H. Bickel has completed a second test on the Z. Weinrick farm. It is a Salt sand gasser good for 3,000,000 feet.

In Union district, Harrison County, the Vesper Oil & Gas Co. is drilling an old well on the J. E. Highland farm from the Gordon to the Speechley sand. In Battelle district, Monongalia County, the Pittsburgh & West Virginia Gas Co. has a duster in all sands on the J. F. Clovis farm. In Clay district, the Philadelphia Oil Co. had the same luck on the E. Moore farm.

#### Roane County

In Curtis district, Roane County, the Reedy Oil Co. completed a second test on the J. N. Keene farm. It is a 2-bbl. pumper in the Salt sand. In Center district, Calhoun County, the Hope Natural Gas Co.'s No. 7,455 on the Dora Stump farm is a gasser in the Big Injun sand. In Mannington district, Marion County, the Manufacturers Light & Heat Co. has a gas well on the T. B. Yost farm.

In Freemans Creek district, Lewis County, Kraus Brothers' test on the Kraus heirs' farm is a gasser in the Speechley sand. In Burning Springs district, Wirt County, R. C. Wagner and others have a gasser in the gas sand on the Luther Kemp farm.

On Twelve Pole Creek, Harvey district, Mingo County, 3,600 feet west of F. H. Yates' test on the Cowden-Workman farm, is a duster. In Center district, Calhoun County, the Hope Natural Gas Co. has now completed in the Big Injun sand a test on the Dora Stump farm. It is a gasser good for 4,000,000 feet. On Elk River, Big Sandy district, Kanawha County, 500 feet northeast of the test on the Rebecca J. Young farm, the Buff Lick Run Oil Co. has the rig completed for a second test.

#### Shooting Helps

In Elk district, Kanawha County, the Virginian Gasoline & Oil Co. has cleaned out and shot in the Weir sand No. 10 on the W. C. Morris farm, increasing its production from almost nothing to 4 bbls. a week. In Roane County, the Roane County Oil Co. cleaned out and shot No. 9 on the W. F. and J. H. Goshorn heirs' farm, in the Squaw sand, increasing its production to 8 bbls. a week. In Henry district, Clay County, the South Penn Oil Co. has the rig completed for No. 9 on the R. P. Parker farm. On Little Island Run, Clay district, Wirt County, W. C. Patterson has the rig completed for No. 35 on the Vernon-Donoho farm.

In Scott district, Boone County, the United Fuel Gas Co. has a gasser in the Berea grit at No. 4,068 Horse Creek Land & Mining Co. tract. In the same district, the same company is testing No. 3,050 on the Julia Hill farm. In Grant district, Cabell County, the Hamilton Gas Co.'s No. 98 on the Oscar and Flora Nelson farm is a gasser in the same formation.

In Sheridan district, Lincoln County, A. F. Morris, trustee, has a gasser in the Berea grit at a second test on the A. F. Morris farm. They are awaiting a shot. In the same district, the Empire State Gas Co. has shut down for the same reason as No. 13 on the Jessie Courts farm. In Grant district, Ritchie County, John Starcher completed in the Big Injun sand No. 5 on the Matt heirs' farm. It is showing for a 2-bbl. pumper.

#### Starting New Work

In Cass district, Monongalia County, the Greensburgh Gas Co. has started to drill on the J. Marion Garland farm. In Chapmanville district, Logan County, the Hope Natural Gas Co. has a rig completed on the E. F. Stowers farm. In Curry district, Putnam County, the Penn Natural Gas Co. has started to drill on the J. M. Chamey farm. In Grant district, Cabell County, the Hamilton Gas Co. is drilling in shale on the H. K. Bledso farm. In Scott district, Boone County, the United Fuel Gas Co. is drilling at 600 feet on the Mohler Lumber Co.'s tract. In the same district, the Owens Bottle & Machine Co. has a rig completed on the Silvested farm.

In Geary district, Roane County, G. L. Cabot has part of the rig material on the J. L. Boggs farm and made a location on the Preston Helmick farm. In the same district, I. L. Storts has started to drill on the J. B. McQuain farm. In Smithfield district, the United Fuel Gas Co. is building a rig on the John Hall farm. In Reedy district, the Heck Oil Co. has rig material on the W. E. Enoch farm. In Ravenwood district, Jackson County, the Heck Oil Co. has rig material at a second location on the William Boggess farm. In Grant district, J. H. Starr & Co. are drilling on the J. H. Starr farm. In Sherman district, Calhoun County, G. L. Cabot has made four locations. In Sheridan district, W. H. Bickel has made a location on the John D. Collins farm.

In McClellan district, Doddridge County, A. C. Garner and others are drilling on the H. I. Riffee farm. In West Union district, a local company is drilling on the J. W. Batton farm. In Grant district, Ritchie County, Franklin Deem has a rig up on the W. C. Lawrence farm. In the same district, H. Flanagan has started to drill on the Devaugh heirs' farm. In the same district, R. Roberts & Co. have a rig up on the L. Jenkins farm. The Hope Construction & Refining Co. has started to drill on the Ward McFarland farm. The Warrior Oil Co. is drilling on the W. E. McGinnis farm.

In Sheridan district, Calhoun County, the Hope Natural Gas Co. has started to drill No. 7,454 on the E. E. Wilson farm. In Washington district, the same company is testing for oil on the J. C. Campbell farm. In Murphy district, Ritchie County, A. H. Jackson is fishing for a string of tools on the Addison Riddle farm. In Grant district, Moyer, Lee & Co. are building a rig on the James W. Webb farm. In Clay district, Roberts & Co. are rigging up on the L. V. Jenkins farm.

In Liberty district, Marshall County, Cochran & Cochran have shut down on account of a broken engine on the E. J. Hoge farm. In New Milton district, Doddridge County, J. B. Travis heirs have shut down for orders on the Granvill Wilson heirs' farm. In Mead district, Upshur County, the Union Gas Corp. is due in the sand on the G. W. Simmons farm.

### SOUTHWEST PENNSYLVANIA

In East Finley Township, Washington County, H. V. Sprowls & Co. completed another test on the John Logue farm, showing for 25 or 30 bbls. a day. The location is 2,000 feet southwest of the second test on the same farm.

# BOYKIN
## *Greyhound Products*

### *The Traveling Block*

No load is too heavy nor speed too fast for the Ideco-Boykin Roller Bearing Traveling Block. The Blocks are stream lined and of the over-balanced type, proportioned to prevent overturning or fouling of the lines. Heavy in weight to insure rapid descent in the derrick without load. Sheaves are equipped with American Heavy Duty roller bearings with individual Alemite grease connection to each bearing. 36″ Manganese Steel Sheaves reduce the bend in the line and prolong wire line service. The lines being perfectly straight eliminate side drag and friction.

### *The Reduction Gear Unit*

The heaviest oil field requirement can be successfully handled by the Ideco Geared Unit. Wherever power is required—drilling, reworking, pumping, pulling rods and tubing — this Ideco Geared Unit can be relied upon to transmit the necessary power quietly, economically and efficiently. Built with 100% overload capacity for starting and intermittent periods. Designed to transmit 96% to 97% of the power at full load. Simple and compact, the Ideco Geared Units are oil-tight, dirt-proof, free from vibration and noise, and are outstanding for their high mechanical efficiency.

### *Bull, Band, Calf Wheels*

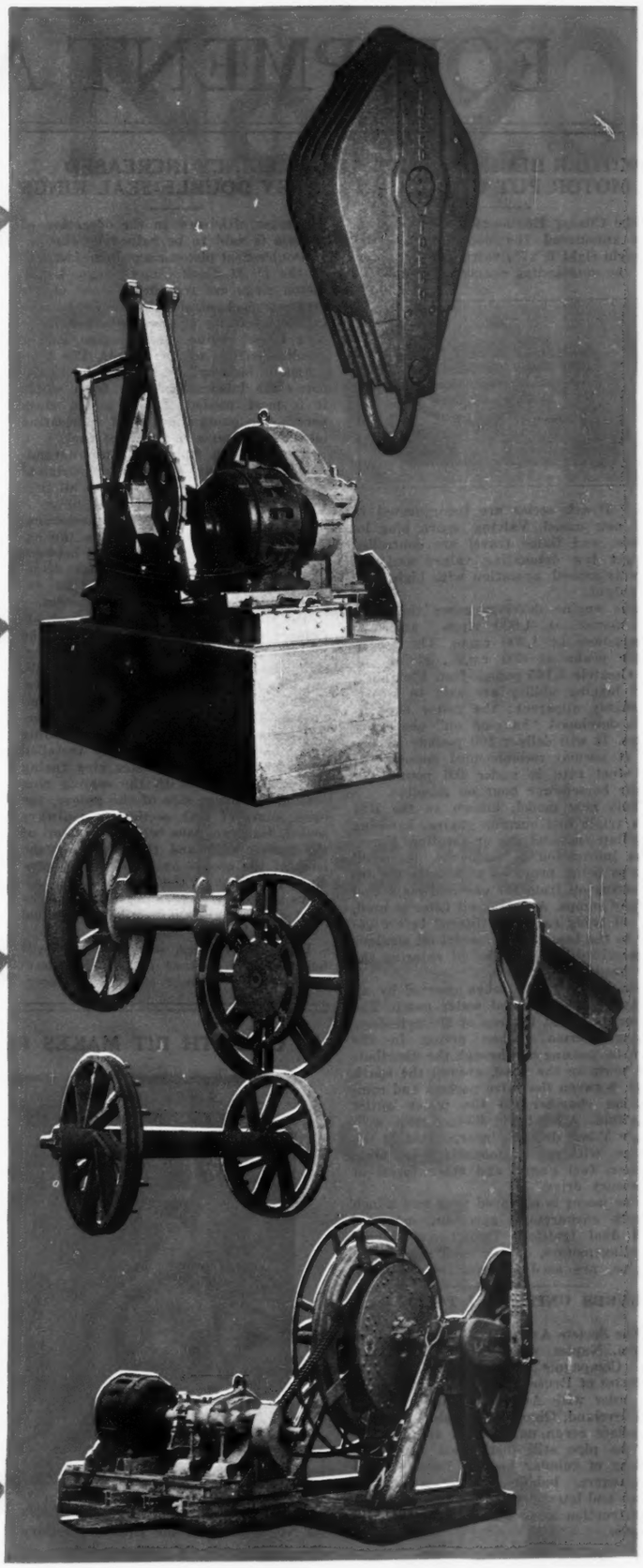
Ideco Wheels have been a standard item of equipment with the oil man for so long that they are generally accepted as the standard of reliability. Even so, as changed conditions warranted improvements, these changes have been made. For instance, Ideco has developed a 24″ Band Wheel which permits the use of a wider belt of thinner structure, creating longer belt life. Ideco Wheels conform throughout to A.P.I. specifications.

### *Chain Rig Pumping Units*

The Ideco Chain Rig is a compact, powerful unit built entirely of steel and resembles in many respects the standard type of drilling or pumping rig. Ample strength, simplicity of design and unusual freedom from wear are outstanding features.

A complete IDECO Chain Driven Rig consists of a chain wheel; crank and shaft; standard "A" Frame jack posts with roller bearings; "A" frame Sampson and headache post; walking beam; pitman and long stroke crank counterbalance. Provision is made for installing a chain driven sand reel if desired. A single reduction geared unit is offered for use with any electric motor or high-speed gasoline engine; or jackshaft units are provided where gas or steam power is used.

This rig provides a portable, trouble-proof drilling or pumping unit that can be economically installed, operated and kept in continuous operation.



*Plants:* Columbus, Delaware, Ohio; Torrance, California; Beaumont, Houston, Texas; *District Offices:* New York City, N. Y.; Pittsburgh, Pennsylvania; Wichita, Kansas; Tulsa, Oklahoma; Shreveport, Louisiana; Fort Worth, Beaumont, Texas; Maracaibo, Venezuela. *Warehouses and Stocks:* Columbus, Delaware, Ohio; Seminole, Tonkawa, Drumright, Okemah, Wewoka, Maud, Sasakwa, Allen, Oklahoma City, Oklahoma; El Dorado, Wichita Heights, McPherson, Kansas; Houston, Beaumont, Big Spring, Odessa, Pyote, Pampa, Borger, Mexia, Luling, Wichita Falls, Grand Saline, Seguin, Hebbronville, Texas; Lake Charles, Shreveport, Louisiana; Smackover, El Dorado, Arkansas; Bakersfield, Taft, Torrance, California.

*Export Offices*—74 Trinity Place, New York City; Columbus, Ohio; Houston, Texas; Los Angeles, California

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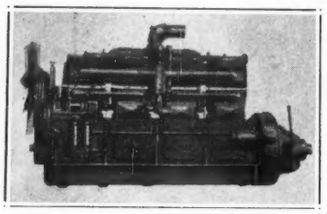
# EQUIPMENT AND SUPPLIES

## ANOTHER BLUE STREAK MOTOR PUT ON MARKET

The Climax Engineering Co., Chicago, has announced the completion of its straight-eight 6″x7″, valve-in-head motor. All the outstanding characteristics of the



Blue Streak series are incorporated in this new model. Valving, spark plug location, and flame travel are controlled to get low detonating values and unusually smooth operation with high power output.

The engine develops more than 200 horsepower at 1,000 r.p.m., and 225 horsepower at 1,200 r.p.m. The torque curve peaks at 600 r.p.m., giving approximately 1,145 pounds-feet. Flexibility and lugging ability are said to be remarkably apparent; the motor showing well developed "hanging on" characteristics. It will deliver 100 pounds B.M.E.P. at normal recommended speeds, and the fuel rate is under 0.6 pound per brake horsepower hour on gasoline.

This new model, known as the R8I is a triple fuel burning engine, handling distillate, natural gas or gasoline. Force-feed lubrication is employed, three oil pumps being provided to handle the lubricating oil from the end and main fuel supply sumps. A duplex oil filter is used, all oil being carefully filtered before going to the bearings. A special oil strainer is provided to clean the oil entering the overhead valve system.

Ample cooling is taken care of by an extra large centrifugal water pump. The water enters at the top of the cylinders, giving thermo syphon action in the jackets, passing up through the distributing parts in the head, around the spark plug, between the valve pockets and combustion chamber, to the water outlet manifold. An 8-blade 36-inch fan with triple V-belt drive is incorporated in the design, with special mountings for tachometer, fuel pump, and other forms of accessory drive.

The motor is equipped with two 2-inch Zenith carburetors, governor, magneto, and dual ignition. Two Leece Neville starting motors, one on each side of the engine, are used for starting purposes.

### DUBBS UNIT GOES TO ITALY

The Societe Anonima Benzina Italiana, Barra, Naples, which is associated with the Compagnie Financiere Belge Des Petroles of Brussels, Belgium, has placed an order with Arthur G. McKee & Co. of Cleveland, Ohio, for a Dubbs pressure distillate rerun unit. This unit will be of the pipe still distillation type consisting of tubular heating furnace, heat exchangers, bubble type fractionating tower and latest type control instruments. Construction work will start in the near future.

### CORRECTING AN ERROR

In an item about the Walworth Co.'s new line of drilling gate and line gate valves published in The Oil and Gas Journal of March 13 the statement that the valves were made in pressures ranging from 500 to 30,000 pounds was of course erroneous. The ratings are from 500 to 3,000 pounds working pressures.

## EFFICIENCY INCREASED BY DOUBLE-SEAL RINGS

Greater efficiency in the operation of engines is said to be gained by the use of Double-Seal piston rings manufactured by the D. D. Cook Co., Chicago. Leaky piston rings are regarded as one of the greatest mechanical deficiencies existing in reciprocating engines, whether it be in a Diesel engine, steam engine, gas or gasoline engine, or compressor. The compression "blow-by" (through leaky rings) blows the lubrication away from where it is most needed. Leaky piston rings permit the contamination of lubricating oil with carbon and unburned fuel.

Leaky piston rings (causing contaminated lubricating oil) are the original cause of abnormal wear between all frictional parts thus lubricated.

The life of any piece of mechanical equipment depends largely upon the extent to which wear is prevented between its moving parts. Piston rings determined the success or failure of an engine in delivering efficient horsepower.

To attain the highest degree of efficiency the piston ring, according to the manufacturer of the Double-Seal ring, should seal not only the cylinder wall, but also the bottom of the piston groove. Double-Seal rings seal both the wall and groove. They are composed of two sections, the master ring and the sealing ring. The Double-Seal ring is installed with the top of the master ring facing the compression. With the sealing ring sealing the lower side of the groove, the open joints of both sections are always sealed. Gas can pass between the top of the master ring and the groove to the back of the groove as with the ordinary ring. The joint of the master ring is always sealed by the sealing ring, and the joint of the sealing ring is always sealed by the back of the master ring.

Double-Seal rings, it is asserted, will hold without leakage in cylinders having unlimited amount of wear or taper.

## BADGETT LUBRICATOR FITS ANY STEAM LINE

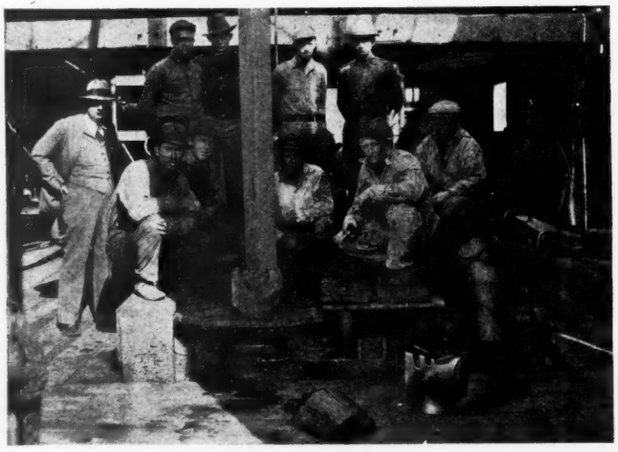
The Badgett steam lubricator, made by the Badgett Steam Lubricator Co., Chickasha, Okla., has a positive and regular feed. It can be attached to any steam line. It sets upright and may be attached at the bottom or at both ends. The Badgett lubricator is operated by water pressure, caused by condensation in the top of the water chamber. The pressure being downward and entering the oil chamber at the bottom, causes the oil to float at the top. The oil then is discharged through the oil line to a sight feed, then through the sight feed into the steam line.

The Badgett sight feed is constructed with a double chamber, which is only partly filled with water by the small steam line entering at the top of No. 2 chamber. The remainder is made up of live steam. A small opening from chamber No. 2 to chamber No. 1 at the top, and a large opening at the bottom of No. 2 chamber entering No. 1 at the bottom, permits all condensation from the condensing line, and also condensation of chamber No. 2, to enter the No. 1 chamber at the bottom. By this means the water is changed in the sight feed every few minutes.

The small opening at the top permits live and dry steam from No. 2 to enter chamber No. 1 at the top, thus keeping the sight feed hot which keeps the oil from becoming chilled and standing in the glass, failing to drop as it should. The Badgett steam lubricator sight feed is self-heating and self-cleaning, by this means of condensation entering and passing through continuously. A small water leak has no effect on the sight feed.

The Trackson Co., Milwaukee, Wis., has appointed the Concrete Machinery and Supply Co., Los Angeles, Calif., as distributor of Trackson tractor equipment for the McCormick-Deering tractor.

## H. C. SMITH BIT MAKES RECORD IN OKLAHOMA CITY



The accompanying illustration shows the No. 1 Jones of the Indian Territory Illuminating Oil Co., Oklahoma City oil field, Oklahoma, drilled by the Reynolds Drilling Co., contractors; also the drilling crew, with "Skeet" Davenport, superintendent, on the right, and J. A. Leidecker, Mid-Continent representative of the H. C. Smith division of the Globe Oil Tools Co., on the left.

The H. C. Smith Type "G" demountable drilling bit, shown on the rotary table, was run February 8, 1930, and made a total footage of 306 feet in three and one-half hours in packed water sand and shale from 1,394 to 1,700 feet, carrying 16 points weight at 33 revolutions per minute. Although the bit is worn out, it is noticeable in the picture that the hole is still out to gauge, owing to the fact that the reaming blades of the bit, a little further down, are not worn under gauges. The next bit made hole from 1,700 to 2,120 feet in shale and shells, a total of 420 feet. A new Type "G" drilling bit is standing on the floor ready to be substituted for the worn bit.

## COMBINATION HOSE MASK HAS OFFICIAL APPROVAL

The Mine Safety Appliances Co., Pittsburgh, Pa., announces official approval of the M-S-A combination hose mask and a permissible canister for protection

against acid gases and organic vapors for M-S-A tank gaugers' masks by the United States Bureau of Mines.

The M-S-A combination hose mask is used to enter high concentrations of gas or oxygen-deficient atmospheres, the wearer being supplied with fresh air from the outside. The mask is approved by the Government for safe use with as much as 150 feet of hose and finds wide use among oil and chemical companies, public utility organizations and municipal authorities generally.

The M-S-A tank gaugers' mask is approved for protection against acid gases and organic vapors and is of special importance to the oil industry because of the protection it affords against hydrogen-sulphide gas from sour crudes and distillates.

### BUSINESS NOTES

The companies formerly operating as Reed, Midwest and National Air Filter Cos. have consolidated and now function as one organization under the name of the American Air Filter Co., Inc. The American was formerly holding company for the three other concerns.

The Surface Combustion Co., Toledo, Ohio, Manufacturer of industrial furnaces and conversion burners, and the Webster Engineering Co. of Tulsa, makers of Webster Radiant gas burners for industrial boilers, have opened a branch office at 447 Sutter Street, San Francisco, with S. T. McAdam, Jr., in charge.

The Ward Chemical Corp., Tulsa, has opened a branch in Oklahoma City at 510 East Grand Avenue, in charge of A. W. Burnett. Complete stocks of chemicals for the oil industry will be carried.

Officers for the ensuing year were elected at a meeting of the directors of the Hercules Powder Co. as follows: R. H. Dunham, president; J. T. Skelly, T. W. Bacchus, N. P. Rood, C. D. Prickett, G. G. Rheuby and C. A. Higgins, vice-presidents; C. C. Hoopes, treasurer; E. B. Morrow, secretary.

The Larkin Packer Co. of St. Louis, Mo., announces the opening of an oil field store in Oklahoma City. This store will carry a complete line of Larkin rotary hole equipment. Milt Greve will be in charge.

### CIVIL WAR CHAIN STILL GOOD

A section of the mile-long wrought iron chain that was stretched across the Mississippi in 1861 by the Confederate army to impede General Grant was discovered recently in the clay bank of the river. The links are as sturdy as ever.

# Imperial No. 20 Slush Pump

15" x 7¾" x 20"

## 350 lbs. Steam Pressure

## Fluid End Shop Tested to 3000 lbs. per sq. inch

# UPPLY CO.

CITY, PA.

BRANCH STORES
IN ALL OIL FIELDS

# EQUIPMENT AND SUPPLIES

## PRODUCTION SWAB HAS FEATURES OF INTEREST

The Kibele production swab, now entering the market in the various major oil fields, is attracting attention not only because of its simplified, sturdy construction but because of several unique features. Its swivel connection is designed particularly to enable it to work in crooked pipe and its relief valve to eliminate excess pressures on the trip out so that there is no danger of sticking it in the casing.

This swab has large fluid passages that permit it to drop through the liquid without any perceptible slackening of the cable. Runs both in Oklahoma and Texas are said to have proven its dependability and wearing qualities. The rubber cup, another economy feature, is expanded through inside fluid pressure.

The entire swab, including the rubber cup, is manufactured by the Kibele Manufacturing Co. of San Antonio, Tex., makers of the Kibele expanding pistons for slush pumps.

### TRADE LITERATURE RECEIVED

The Coppus Engineering Corp., Worcester, Mass., is mailing a bulletin describing the Coppus Heat Killer, designed to remove foul air, heat, dust, etc., from industrial plants.

"Notes on Uses of Nickel Cast Iron," to be released soon by the International Nickel Co., Inc., New York, contains virtually the same information as that in an earlier publication with the same title, but the new booklet is in handbook size for the convenience of the engineer.

A big undertaking in the retail marketing of gasoline and oil has been completed by the Shell Petroleum Co., which opened simultaneously in Detroit, Mich., 60 stations for the sale of its products. Each station is equipped with Erie meter pumps.

"The Welding Contractor," "Welding and Cutting Nomenclature, Definitions and Symbols" and "Arc Welding in Steel Fabrication" are articles appearing in the current issue of The Fusion News, published by the Fusion Welding Corp., Chicago.

The Youngstown Sheet and Tube Co., Youngstown, Ohio, has prepared a 62-page illustrated booklet on "Youngstown Pipe" as a special service to users of tubular goods. The company makes casing, tubing and other types of oil country pipe and the booklet is filled with useful information for the oil man.

Useful buying information on virtually every item of equipment needed in the transportation, storage, handling and dispensing of petroleum products is contained in the new 80-page loose-leaf book prepared by the Butler Manufacturing Co., Kansas City, Mo., and Minneapolis, Minn. The book is mailed on request only.

## MAKING REDWOOD TANK TO COMBAT CORROSION

The effects of hydrogen sulphide gas fumes found in sour crude in Southwest Texas and the Panhandle fields have proved a troublesome problem in the storage of oil. Black, Sivalls & Bryson, Inc., manufacturers of tanks, with headquarters in Bartlesville, Okla., have announced their B.S.&B. vapor pressure wood tank, the result of more than two years of observation on a tank designed by this concern to meet the corrosion problem.

The research engineers of the company made exhaustive experiments, which indicated that there is no metal, which is practical to use in bolted storage tanks, that is impervious to the action of hydrogen sulphide gas fumes found in the sour crude. They therefore developed the vapor pressure wood tank, constructed much like the B.S.&B. vapor pressure bolted steel tank which is used extensively in the Mid-Continent Field. This wood vapor pressure tank is also supported by tie rods on the inside, and is built to withstand a pressure of 16 ounces, and a vacuum of two ounces under working conditions with a reasonable factor of safety.

The tank is built of redwood, the most suitable material that the engineers found to be impervious to the action of hydrogen sulphide gases found in sour crude. The inside of the tank is so constructed that no metal is exposed to the oil or to the hydrogen sulphide gas fumes. Every metal part used on the inside of the tank, to give it rigidity and strength, is insulated with wood.

The vapor pressure wood tank is being manufactured at the company's Borger-Tex., factory, and will be manufactured at the new wood tank plant now under construction in Odessa, Tex. These tanks will be stocked at the company's branches in Southwest Texas and the Panhandle and will be available to the customers from these points. The tank is made in 250, high 500, low 500 and 1,000 bbl. sizes. The company also manufactures a gas-tight wood tank for use in the storage of heavy gravity oil.

## BASIC DESIGN SAME AS THE ALCO DRAG REAMER

Built on the same basic design as the familiar Alco "drag" or blade type reamer, the new Alco roller reamer, made by the Alco Oil Tool Co., Inc., Compton, Calif., is constructed in the form of a collar that fits on the sub of the reamer shank. It slips into locking slots there and is held securely in place by the shoulder of the bit. The roller cutters are machined from a special alloy steel and are heat-treated under electrical temperature control to the exact degree of hardness for best service. The rollers are divided in the center, and slip rings are inserted between the roller ends and the bearing shoulders of the body to reduce wear and to promote freer rotation. The two large bearing pins are removable from above only, and are locked in place by small pins which enter from inside the collar and can not work out as long as the reamer is on the shank. Hard facing is applied on the outer edges of the body-bearing shoulders that carry the bearing pins to prevent excessive wear that would allow the pins and rollers to drop off in the hole.

The reamer body is a high-grade steel casting and its oval shape leaves plenty of room for free passage of the circulating mud. Ample clearance is provided between the rollers and the reamer body.

### BJ OFFICE IN OKLAHOMA CITY

Byron Jackson Co. has established offices in the Smiser Building, Oklahoma City, conveniently located on "Supply Row." This new location will be headquarters for Bud Vincent, Bob Cook, Troy McMillan, Monk Cook, Van Nelson, Al Ausmus and for A. E. Raine when he is in the Oklahoma City territory. Representative stocks will be maintained under the supervision of D. O. Pugh. Marshall Moore, representing Byron Jackson Co., has left his headquarters in Kansas to cover various eastern fields in Ohio, West Virginia, Pensylvania, Michigan and Indiana on a six weeks sales trip.

## MR. GRAY TO SERVE AS FOREIGN FIELDS AGENT

Owing to its increased foreign business, the Fluid Packed Pump Co., Tulsa, has engaged the services of F. Harold Gray as special factory representative to

F. Harold Gray

look after its sales and service in European and Asiatic fields. For several years the company has had Tony Statts as factory representative in South American fields.

Mr. Gray spent the last seven years in the service of the Standard Oil Co. of New Jersey in Mexico and Oklahoma. During the last year he was associated with the field engineering department of the Carter Oil Co. in Seminole, Okla., engaged in the investigation of pumping equipment.

Previous to entering the oil industry Mr. Gray was engaged in general import and export work in eastern Europe. During the World War he saw service with the British infantry in France and with the Serbian army in Macedonia.

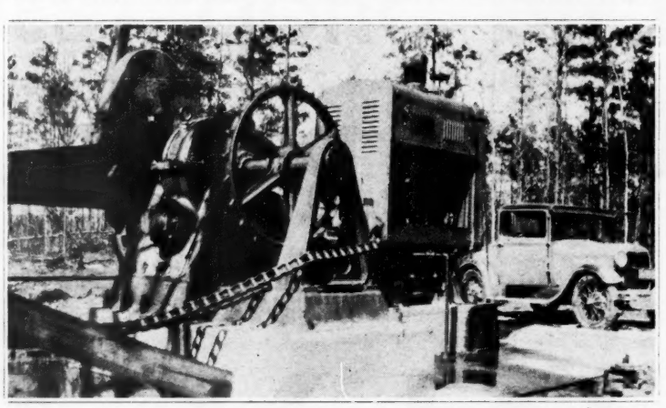
### ENGINEERING SERVICE URGED

At a meeting held in the Statler Hotel, St. Louis, Mo., at which Burtner Fleeger, Oklahoma Steel Castings Co., Tulsa, presided, the Steel Founders Society discussed ways and means for better serving the industries of America. It was brought out that the production of steel castings involves more than the supplying of a commodity; it is distinctly an engineering service. Stressing this phase, F. J. Stanley, Michigan Steel Casting Co., Detroit, and others, advocated even greater co-operation with designers and engineers of the companies to whom the steel foundries sell, lending assistance and giving such suggestions as will enable the customer to get the maximum advantage and service from the steel castings he buys.

### U. S. CHAIN PROMOTIONS

United States Chain & Forging Co., Pittsburgh, Pa., announces several promotions. L. A. Gerber, former western district sales manager, has been made general sales manager. W. L. Reilly, for many years a member of the headquarters staff, is named assistant general sales manager. L. K. Robinson, former head of New England sales activities, is made eastern district manager with headquarters in New York. Harley Morris, former salesman in the western division, becomes western district manager with headquarters in Chicago. The United States Chain & Forging Co. makes industrial and commercial chain.

## CAST-IRON BASE SERVES AS OIL PAN ON BUDA UNIT



The new Buda 85-horsepower unit with cast-iron base is shown here in the field at Smackover on Johnson No. 5 for the Simms Oil Co. This new job by the Buda Co., Harvey, Ill., is hooked to a Gaso unit and is reported to make a most satisfactory power plant.

The upper half of the bell housing and the engine crankcase is bolted directly to the cast-iron base. This assures a strong, sturdy unit, eliminating practically all vibration. A new feature of this construction is that the cast-iron base serves as an oil pan with hand-hole plates for servicing. The new heavy duty twin-disc clutch is made specially for this job. Contact between the friction plates and the drive plates is through gear teeth.

The radiator is of new construction with removable sections for quick servicing in case any part of the radiator becomes damaged. The Buda 85 operates on either natural gas or gasoline with governor which has adjustment for two ranges of speed.

# 306 feet in 3½ hours with an H.C.SMITH Type "G" demountable DRILLING BIT in the Oklahoma City field

SOME exceptional records have been made by the H. C. Smith Type "G" Demountable Drilling Bit since its introduction in the Oklahoma City oil field. A number of records in comparative test runs have been remarkable.

The record of 306 feet in 3½ hours referred to was made in the Jones Well No. 1 of the I. T. I. Oil Company, Oklahoma City, Okla., through packed water sand and shale.

The illustration below shows the bit (on rotary table) that made the run, also a new bit ready to be substituted for the old one—a change requiring but a few moments.

Although the bit is worn down, it will be noted that the hole was maintained to gauge during the entire run due to the fact that the reaming blades of the worn bit are not worn under gauge.

Write us for catalog No. 31 containing additional records of performance and complete information regarding this hole-making tool.

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Los Nietos, California

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Bakersfield, Calif. Ventura, Calif.
Kettleman Hills, Calif. Taft, Calif.
Oklahoma City, Okla.

*Cable Address:* "Smitheo, Whittier"

*Skeet Davenport, Superintendent (extreme right) and crew of the I. T. I. Oil Company's Jones Well No. 1, Oklahoma City, Oklahoma. J. A. Leidecker, Mid-Continent Representative H. C. Smith Division of Globe Oil Tools Company, at extreme left.*

# Technical Questions Answered

BY CHARLES K. FRANCIS, PH.D., TECHNICAL EDITOR

*This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry. Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.*

*Question should be submitted in as much detail as possible so as to assure a satisfactory answer.*

*All inquiries should be signed and if other than the given initials are to be used please indicate the desired letters.*

*Questions involving patented processes, intricate formulas and calculations and estimates of costs, for obvious reasons, cannot be answered. The replies will appear on this page within a reasonable time.*

## DYES FOR COLORING GASOLINE

**What are the common dyes used in coloring gasoline, what is the source and how are they put into solution? What quantities are used?—L. S.**

Colored gasolines contain organic dyestuffs to give a distinguishing color to a particular kind of gasoline or to mark a gasoline as the product of a particular company. The common dyes employed for coloring gasoline, ranging from yellow to purple, are derived from coal tar. Only a small number of the known dyes are suitable for this purpose. To be satisfactory a dye must readily and completely dissolve in gasoline to form a clear, transparent solution. The solution must remain clear on standing and develop neither a cloud nor a residue by precipitation of the dye. The dye must not react with antiknock compounds in the gasoline and thus destroy the antiknock qualities of the fuel or form insoluble material. It is further required that the oil soluble dyes be reasonably fast to sunlight. Gasoline dyes must not be deposited on the intake valves or cylinder walls of the combustion engine or cause fouling of the spark plugs. They must be completely burned and expelled in the exhaust.

The most widely used colorant for gasoline is Oil Red. This common red dye is technically known as Sudan IV and has the chemical name aminoazotoluene-beta naphthol. All "Ethyl" Gasoline and many special gasolines are colored by Oil Red. An artificial yellow color is produced by using Oil Yellow, the coal tar derivative aminoazotoluene, but yellow is not a desirable color for gasoline and the use of this dye is negligible. The orange to red range of colors is supplied by the azo dyes known as Sudans I, II, III, IV, which increase in redness in the order given. Oil Soluble Green is a mixture of Oil Yellow and Blue. The common Oil Blue is derived from the coal tar product anthraquinone. The purple dye for aviation gasoline is also made from anthraquinone and in composition is closely related to Oil Blue.

Gasoline dyes, while called Oil Red and Oil Blue, are manufactured as dry powders. In order to incorporate them into gasoline quickly and easily they are first dissolved in benzol or a similar solvent, usually to a concentration of 2 per cent by weight. Such quantities of the benzol master solution as will give the desired shade and strength of color are then added to refined gasoline in storage tanks or tank cars. The quantity of actual dye used varies from 5 to 10 parts per 1,000,000 parts of gasoline. For example, 2 pounds of Oil Red may be dissolved in 1 liter of benzol and this solution of the dye used to treat 40,000 gallons of gasoline.

## ORIFICE MIXER FOR TREATING

**Information is desired concerning the formula for calculating the flow of acid and caustic through different sized orifices used in treating columns. I have seen such a formula but can't recall the magazine; any help you can give me will be much appreciated.—P. D.**

There is a discussion of the calculations required for determining the flow of liquids through an orifice in Principles of Chemical Engineering, by Walker, Lewis and McAdams.

The magazine article to which you refer may have been a series of articles by Morrell and Bergman that were published in Chemical and Metallurgical Engineering, April, May and June, 1928. You may obtain a reprint from the Universal Oil Products Co., 310 South Michigan Avenue, Chicago, Ill.

The general orifice formula, as stated by these writers, is:

Where $Q = CA\sqrt{2GH}$

Q = Flow in cubic feet per second.

C = Discharge coefficient = 0.65 for oil distillate.

A = Area of orifice in square feet.

G = Gravity of acceleration per 32.2 feet per second.

H = Head of liquid in feet.

Or $Qb = 18.26\ D^2\sqrt{H}$

Where Qb = Flow in barrels per hour.

D = Diameter of orifice in inches.

H = Head of liquid in feet.

To facilitate the design of these orifices, the writers have made the following calculations:

**Flow of Acid and Caustic Through Orifice**

Specific gravity of 66° acid . . . . 1.84

Specific gravity of 30° caustic soda 1.25

From general orifice formula:

$Q = CA\sqrt{2GH}$

Q = Quantity in cubic feet per second.

C = Coefficient—approximately 0.61 for low ratio of diameter.

A = Area of orifice—square feet.

G = Gravity constant — per second per section.

H = Pressure drop across orifice—feet of liquid.

Transferring pressure in pounds to head of liquid of the desired specific gravity, we have:

Acid—1 pound per square inch $= \frac{2.30}{1.84}$

= 1.25 feet of acid.

Caustic—1 pound per square inch = 2.30

$\frac{}{1.26}$ = 1.825 feet of caustic.

| Diameter of orifice inches)— | Area (sq. in.) | Pressure—lbs. per sq. in. Q = lbs. of acid per hr. 4 | 20 | Q = gal. caustic per min. 4 | 20 |
|---|---|---|---|---|---|
| One-sixteenth | .0031 | 97 | 217 | .... | .... |
| Three-thirty-seconds | .0069 | 216 | 483 | .... | .... |
| One-eighth | .0123 | 385 | 860 | .51 | 1 13 |
| Five-thirty-seconds | .0192 | 600 | 1,344 | .79 | 1.77 |
| Three-sixteenths | .0276 | 864 | 1,930 | 1.14 | 2.54 |
| One-fourth | .0491 | 1,540 | 3,440 | 2.02 | 4.54 |
| Five-sixteenths | .0765 | 2,400 | 5,326 | 3.15 | 7.05 |
| Three-eighths | .116 | 3,440 | 7,680 | 4.53 | 10.15 |
| Seven-sixteenths | .150 | 4,690 | 10,500 | 6.18 | 13.85 |

## COMPRESSOR WORK EQUATION

**I would like to obtain data on the value of the exponent S, sometimes called N, in the compressor work equation—**

$$\frac{\text{Work}}{\text{cu. ft.}} = 144\,\frac{S}{S-1}\,(\text{supply pressure})\left[\left(R_p\,\frac{S-1}{S}\right) - 1\right]$$

**Where $R_p$ equals ratio to delivery pressure to supply pressure for the various hydrocarbon constituents of natural gas. I would appreciate knowing where I might obtain values for S for natural gas of various gravities?—C. J. T.**

Formulas relating to power required for compression may be found in Mechanical Engineers' Handbook, by Marks. Note pages 1,617 and 329. The development of the theories involved is to be found starting with page 329. The work formula on page 329 explains that under usual working conditions 1.3 is the approximate value of n.

## SOURCE OF NAPHTHENIC ACIDS

**I would like very much to know where I may obtain samples of naturally occurring naphthenic acids?—S. S.**

Naphthenic acids have been separated from the alkaline sludge formed during the treatment of kerosene and gasoline distillates from certain crudes. The first petroleum to be investigated for naphthenic acids probably was the Russian oil. Similar compounds have been prepared from California, Mid-Continent and Gulf Coast crude oils. The usual source of these acids is either the alkaline extract from the crude or the light oil distillates after treatment with sulphuric acid.

Samples of naphthenic oils may be obtained from some of the larger companies operating in the districts indicated.

## BOOKS ON REFINING

**Can you refer me to any books on refining, sort of beginners lessons, etc.? If you can please put me next and receive my everlasting gratitude.—E. L.**

The Oil and Gas Journal contains in every issue some information about refining; frequently there are articles describing various forms of refining from the crude oil to the final residue fuel oil or coke. The Annual Refinery Number, March 6, 1930, contains numerous articles and data of value. The following may be of special help to you: "Processing Panhandle Crudes," page 136; "Refinery Cost Versus Selling Price," page 192; "Fuels and Lubricants for Aircraft," page 197; "Distillation Methods Change Rapidly," page 202.

Some of the books relating to the petroleum industry, and in part to refining, are: "American Petroleum Industry," by Bacon and Hamor; "Handbook of the Petroleum Industry," by David T. Day; "Motor Fuels," by Leslie; "American Petroleum Refining, Second Edition," by H. S. Bell.

## BENZOL FROM REFINERY GASES

**Does the ordinary gas from cracking stills contain commercial amounts of benzol or can this substance be made from such gas?—F. D. M.**

The presence of benzol and other aromatic hydrocarbons has been reported in several crude oils, notably certain oils from California and Borneo, and it is recognized that some forms of cracking tend to convert the normal hydrocarbons to aromatics. Somewhat larger quantities of benzol have been found in the gases when the cracking is done in the vapor phase than in the so-called liquid phase type. It appears that the aromatics are produced by mild cracking but the heat treatment should be prolonged to obtain the greatest conversion.

Research work has shown that numerous simple hydrocarbons of the paraffin group may be converted to benzol and other aromatic hydrocarbons. The crudes of the aromatic type yield the larger quantities of benzol and related compounds. Galician oils, for example, have been decomposed at temperatures close to 1,300° F. yielding about 9 per cent on the basis of the gas oil charged. This temperature is considered to give the maximum decomposition.

Natural gas and refinery gas are promising materials for the manufacture of substances that may be stored and transported without large losses. Propane and butane are to a large extent waste products in the production of natural gasoline from natural gas. These, with the addition of methane and ethane, form a large part of most natural gas. Some of the larger refineries find it difficult to dispose of the gas from the stills and much research work is now under way looking for methods which will permit satisfactory conversion of some of this gas to more stable forms.

A recent announcement states that laboratory investigations at the Massachusetts Institute of Technology have indicated yields of one-fifth gallon of benzol from 1,000 cubic feet of methane. The temperatures used in these experiments were very much higher than those employed for the earlier work with gas oil. The methane conversion was accomplished at temperatures between 4,800 and 4,900° F. If such processes are developed to a commercial scale another source of knock reducing material becomes available.

## GASOLINE BY HYDROGENATION IN GERMANY

**I have noticed several articles about the production of gasoline from coal and other substances by the hydrogenation process, which I understand was first developed in Germany, and would appreciate any information you have about the quantity of this kind of gasoline that is being made in Germany?—T. L. G.**

According to statements which have recently appeared in the foreign press over 32,250,000 gallons of motor gasoline were produced last year in the plant of the I. G. Farben-Industrie at the Leunawerke by the hydrogenation of coal. Some of these articles express the opinion that there was a danger that a wide application of this process would tend to prematurely exhaust the coal deposits of Germany. A calculation of the known deposits appears to indicate that there is little chance for this to be true; because, if the total motor fuel supply of Germany were to come from this source, it would require only 2 per cent of the coal output to meet the demand for such fuel. See page 138, The Oil and Gas Journal, March 27, 1930.

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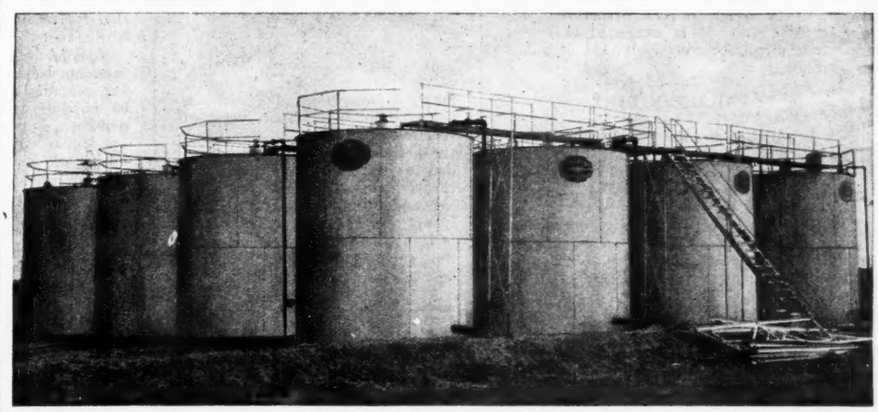
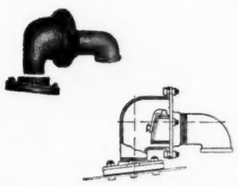


Battery of sixteen 500-bbl. Parkersburg Gas-Tight Tanks at Hempstead, Texas. These Tanks are equipped with the most improved type of vapor pressure fittings. Notice the Steel Stairways, Runways and Guard Rails—all of Parkersburg manufacture.

### Vacuum Valve with Swing Check



### Parkersburg Vapor Pressure Valves

The efficient, automatic operation of Parkersburg Vapor Pressure Valves, often referred to as "vapor pressure fittings," maintains a pressure in Parkersburg Tanks and prevents the escape of valuable vapors.

The Pressure Release Valve is designed to fit the manhole dome and retain pressure up to 16 ounces, which reduces breathing and saves the light ends of the crude.

The Vacuum Valve with Swing Check is designed to permit entrance of air as required to take care of temperature changes, or to relieve any created vacuum when the tank is run to the pipe line. Can be supplied for either 2 or 4 inch openings.

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104-A

# Field Problems and Their Solution

**EDITED BY THOMAS F. SMILEY**

*In order that men connected with the drilling, producing and transporting branches of the petroleum industry may procure quickly a solution of many problems confronting them from time to time in their work, The Oil and Gas Journal has arranged with leading engineers and other recognized authorities to answer questions submitted by readers of this publication pertaining to the work of drilling and producing crude oil and transporting this product.*

*Everyone is invited to submit questions freely. These questions will be submitted to proper authorities by Mr. Smiley, who edits the page, and answers, based on the best available information, will be published. Each question should give as much detail as possible, especially where it relates to matters where depths of sands, types of sands and operations on adjoining properties would have a bearing on the problem involved. The source of all questions will be considered as confidential and only initials will be published in connection with the question.*

*In this connection, The Oil and Gas Journal will be glad to publish articles from field men who have devised new methods or practices which are improvements.*

*In case an immediate answer is important, one will be given by mail if the writer requests it.*

## CONCERNING OIL STRUCTURES

**I would appreciate it very much if you would answer the following questions:**

**1. It seems to me that in many of the larger basins (e.g., the Big Horn Basin, Wyoming) producing structures are found more often on the rim than on the middle. If this is true, is the reason that exploration is easier on the edge than in the central part? Or is there any geological reason why oil should accumulate more readily on the rim?**

**2. Please give me the names and addresses of universities and geological surveys of the western states. Which of them publish geological bulletins?**

**3. Is there any book which covers the regional geology of the United States or of the western mountain area?**

**4. Where can I borrow copies of the bulletins and other publications of the United States Geological Survey which are out of print? There is no public library in my town. I would of course gladly make a deposit.—H. H.**

In the order of your questions, it is suggested first that you write to Frederick C. Clapp, consulting geologist, 30 Church Street, New York, for a copy of his paper, "Role of Geologic Structure in the Accumulation of Petroleum," which was published in Volume 2 of "Structure of Typical American Oil Fields," issued by the American Association of Petroleum Geologists, Tulsa. This volume also contains a paper by John G. Bartram on "Elk Basin Oil and Gas Field, Park County, Wyoming, and Carbon County, Montana," which covers the geology of that area. An article by Mr. Bartram appeared in The Oil and Gas Journal January 23, 1930, on "Possibilities in the Julesburg Basin" which may give you some desired information. It is assumed that you have been following other articles on geological subjects which The Oil and Gas Journal has published from time to time, including the recent one by Gertrude Sober-Fields on oil accumulation.

In answer to your second question it is suggested that you address letters to the state geological survey and the state university in several western states in which you are interested. These departments usually are located in the state capital and you can get your information from them direct.

The United States Geological Survey publishes various regional surveys, and it is suggested that you write it at Washington, D. C., for this detailed information.

This department knows of no one who will loan copies of bulletins or other publications of the United States Geological Survey, for if the particular paper you desire is out of print the only copies in existence are in private libraries and it is not their usual policy to permit them to leave their files. It is probable you can obtain through the American Association of Petroleum Geologists, Tulsa, a great deal of detailed information, especially by purchasing the two volumes of "Typical American Oil Structures" referred to and it is suggested that you write direct for copy of its list of publications available.

## PARAFFIN DIRT

**Is paraffin dirt the waxy material that clogs wells in many fields? That is, is it paraffin? Or is it something else?—T. N. S.**

Paraffin and paraffin dirt are different things. In fact there is no paraffin in paraffin dirt. There is diversity of opinion as to the exact nature of it. In his work on "The Geology of Petroleum and Natural Gas," Dr. Ernest R. Lilley says:

"Paraffin dirt is a substance concerning whose nature there is considerable debate. Some investigators have considered it to be a substance wholly unrelated to petroleum and natural gas and therefore of no importance to the prospector. Though little is definitely known about its origin and character, the number of instances in which it has been found above points on the Gulf Coast Plain from which oil and gas were later obtained tends to indicate some definite relationship and value to the prospector.

"Paraffin dirt has been defined by D. C. Barton as an argillaceous soil permeated by a definite chemical substance that is organic in origin, formed by bacteria living in part at least on methane and oxygen. Paraffin dirts are characterized by rubbery textures but, while elastic, lack the cohesion of rubber. The name 'paraffin dirt' is a misnomer as the substance contains no paraffinaceous material. It appears to be masses of organisms of very low rank in a gelatinous matrix. The substance is most prominent within 3 inches of the surface, decreasing rapidly in amount below that depth.

"Though there is great difference in opinion between Gulf Coast observers concerning the manner of its formation, there seems to be fairly general agreement that paraffin dirt can only be formed where there is constant, localized ebullition of methane gas. While the possibility that sufficient quantities of methane may be generated by the decay of surface matter is admitted, and the use of paraffin dirt as an indicator of the existence of petroleum and natural gas in other areas is open to criticism, the close relationship between its occurrence and the presence of oil and gas in the Gulf Coast area have led geologists to consider it a reliable indicator in that section. To oil operators there it is as important as an actually observed gas seepage.

## SHALL HE KEEP ON PUMPING?

**We have been pumping a well for five weeks and we have got nothing but salt water, although we had a good showing of oil when we completed the well. All the wells in this district are in the limestone and there is a good deal of salt water in all of them, but I do not know of any other well that has had so much salt water as this one of ours and I want to ask you if you think there is any use in pumping this well any further?—N. E. E.**

A good deal would depend upon the location of this well with regard to its position on the structure.

If it is an edge well it is more than likely that it has "gone to water," that is to say, water has crowded in ahead of the oil and is filling the space around the hole and the oil cannot break through. This is also referred to as "coning."

On the other hand, in some instances wells that started by producing water have been converted into producers later by pumping out this fluid and permitting the oil to reach the open hole. In such a case, however, the amount of water is limited to a pocket in the formation, and is not from bottom or edge water supplied from an area of unknown size adjacent to the producing horizon.

In your particular case it is suggested that you examine the conditions that exist and have existed in other wells in this field and also correlate your well log with those of your neighbors and in this way ascertain definitely whether you are up-structure or not. When these data are studied you will have definite information by which to judge the advisability of proceeding further with removing salt water from this hole.

### WHY WAS IT CALLED THAT?

#### NOSE

Why this name is applied to a certain type of monocline commonly found in the Mid-Continent region becomes apparent upon inspection of the waving lines which the petroleum geologist employs to denote structural dips, folds, thrusts, etc. The lines representing it picture quite clearly a slightly uptilted nasal organ. This form of structure grows out of a normal dip condition and sometimes is called a plunging anticline.

## COAL ABOVE THE OIL POOLS

**Approximately how many producing oil wells have been drilled through the coal measures in the eastern states? Is there any other part of the American oil fields where coal seams are present above the oil?—L. M.**

No records are at hand to indicate how many producing wells have been drilled through veins of coal in the eastern states. So far as this department's knowledge goes, no such records are in existence. Coal seams are penetrated in many parts of the United States in drilling for oil. If you desire more detailed information on this point, it is suggested that you obtain from the office of the State Geological Survey in each oil-producing state maps showing both the coal areas and the oil areas. By study of these you could see where both minerals exist in the same area.

## CASING IN THE OIL SAND

**In several wells that I know of the casing shoe has been set several feet below the top of the oil sand. Can you tell me the reason for doing this? It seems to me that such a practice would result in loss of production.—S. L. N.**

The reason for setting a casing shoe in an oil sand is not evident from the nature of your question, but if it has been done it would seem to have been a mistake, or perhaps a good casing point could not be found above the oil-bearing formation.

As to loss of production, this may or may not be caused by such a procedure, for it might be that the upper part of the sand was barren of oil and in that event plugging it off with the casing would not mean any material loss.

Again it might be that this upper portion of the sand was oil-bearing and also carrying gas which would assist in expelling the oil from the sand, and under such a condition it would be expected that the production from the well would be affected.

You do not state whether cement has been run back of the casing and if it has not and this is an inside string it might be possible that it was done for the purpose of permitting the gas in the upper part of the formation to escape around the oil string or casing and out through the control head at the top of the well.

Without more definite information the question presents too many angles to be fully answered and if you care to outline more of the problem this department will try to give you a more complete answer.

## AND HE LIVES TO TELL IT

Everybody will read with interest this experience of an old-time well shooter, A. P. Shaffstall, now residing in Indianapolis, Ind.:

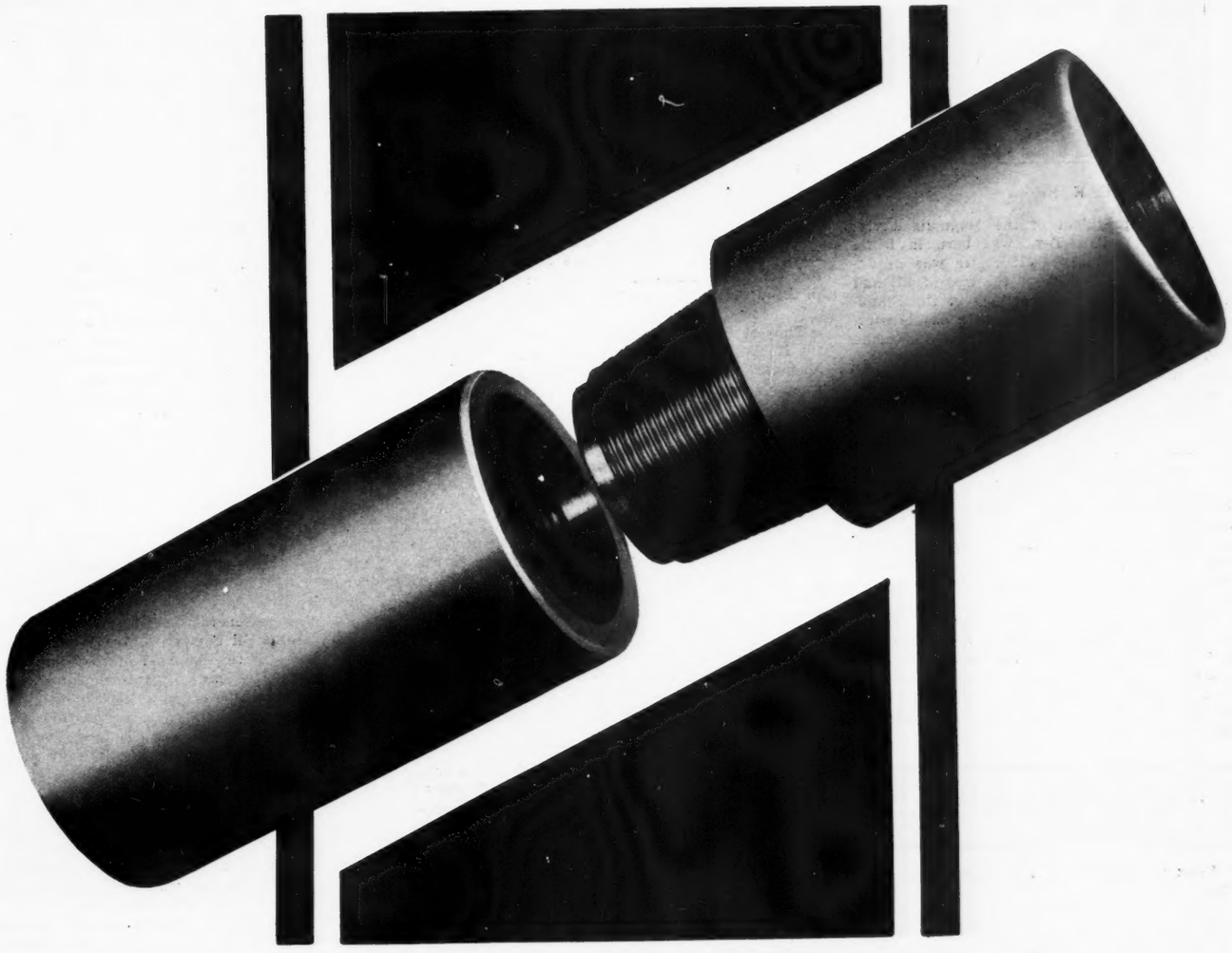
"I have just read an article on your page, Field Problems and Their Solution (issue of March 27), entitled "Catching 'Em Like Baseball" and it recalls to my mind an incident when I was a nitroglycerin shooter in the employ of Green & Sterrett of Lima, Ohio.

"In the fall of 1886 I was called upon to shoot a well along the St. John's Road about 3½ miles south of Lima for the Lima Drilling Co. John Clover, manager and a member of this company, advised me that the well flowed every half hour and had just finished flowing as I arrived at the well and that I would have time to run a shell.

"Clover wanted 13 feet of anchor on the first shell. I filled this shell and had it in the fluid some distance when she commenced flowing. Consequently I lost control of the shell. I went to the mouth of the hole and waited there until I felt the shell come along with the flow. I caught it and held it in the hole until the flow was over. I could not walk away from the hole while the well was flowing on account of the anchor. I think the flow was above my head 12 or 15 feet when I got hold of the shell. The time she was flowing I cannot tell as I was busy taking care of the shell. She flowed over the derrick quite a distance, so the spectators told me.

"When this happened everybody ran, except John Clover, who came towards the derrick when he saw what the situation was. He wanted to know what he could do and I asked him to get me a stick of wood to put through the bail so I could hang the shell in the hole and get my line straightened out. He did this. I put my line in shape, run this shell, also the balance of the shot (100 quarts total amount) and exploded it."

# IDEAL
# Tool Joints



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# MEN KNOWN IN OILDOM

**E. R. Brown**

E. R. Brown, president of the Magnolia Petroleum Company, Dallas, Tex., was born in Little Hocking, Ohio, December 4, 1868. He was graduated from Marietta College at the age of 21, and four years later entered the employ of the Standard Oil Company at Olean, N. Y., as a day laborer. Promotion was rapid and in 1897 he was made assistant superintendent.

A year later Mr. Brown moved to Corsicana, Tex., where he built and operated the refinery of J. S. Cullinan & Company, holding the position of superintendent. In 1901 he became general manager of the company and remained with the plant through various regimes in that capacity until 1911, when the Magnolia Petroleum Company was organized and he became vice president and general manager. He moved to Dallas in 1914. In 1924 he was elected president of the company, and has continued in that capacity. He is also a vice president and director of the Standard Oil Company of New York.

For the last 10 years Mr. Brown has been president of the Young Men's Christian Association in Dallas. He is past president of the Dallas Chamber of Commerce, is a Mason and an Odd Fellow. He also is a member of Alpha Tau Omega and Phi Beta Kappa fraternities, the latter an honorary scholastic organization.

# PERSONAL PARAGRAPHS

**J. P. Fenet has moved from Los Angeles, Calif., to Paris, Tex.**

* * *

F. M. Blagden has been elected a director of the North Central Texas Oil Company, succeeding W. T. Eldridge, resigned.

* * *

T. V. Coleman, assistant land man for The Texas Company, Fort Worth, Tex., is spending a two weeks' vacation at Galveston, Tex.

* * *

William Simpson, general superintendent of the California Company, Midland, Tex., has been spending a few days in the company's office at Dallas.

* * *

Earl Roff, of Cushing, Okla., has become superintendent of the Taxman Refining Company's plant at Wichita Falls, Tex., succeeding J. T. Smart, former superintendent.

* * *

Leon Avnatamoff, former owner of oil lands in Baku, is in London in connection with petroleum developments in South American countries with which British interests will be associated.

Claude L. Freeland, an independent oil producer, of Bristow, Okla., who has been ill, is now reported as convalescing.

* * *

Stephen Swartz, manager of the petroleum division for the J. P. Devine Company, has been spending several days in Tulsa.

* * *

J. F. Rouse, assistant superintendent of the Standard Oil Company at Casper, Wyo., has been visiting the Chicago offices.

* * *

J. B. Atkins, Jr., vice president of the Shreveport-El Dorado Pipe Line Company, spent a week in New York and Baltimore recently.

* * *

Harry I. Miller, manager of the western division of the Detroit Graphite Company, attended the opening of the company's new offices in Tulsa last week.

* * *

C. C. Lakin, of Chicago, manager of the asphalt and road oil department of the Standard Oil Company of Indiana, has been visiting the Rocky Mountain district.

* * *

J. W. Elder, general superintendent in Rumania of the Phoenix Oil & Transport Company, Ltd., is in the United States studying deep drilling problems in various oil fields.

* * *

Sir Henri W. Deterding, managing director of the Royal Dutch-Shell companies, has sailed for the United States to attend the opening of the new Shell Building at San Francisco, Calif.

* * *

Thomas Armstrong, general manager of the Dutch East Indies Oil Company, has recently started a tour of the oil fields of the world and at present is in the United States studying modern developments.

* * *

Thomas B. Greene, Lima, Ohio, vice president of the Buckeye Pipe Line Company, and T. C. Barnes, Marietta, Ohio, general superintendent of the same company, were Pittsburgh, Pa., visitors last week.

* * *

Henry Nevitt has returned to Casper, Wyo., after a trip to the home offices of the White Eagle Oil & Refining Company in Kansas City, Mo. Mr. Nevitt is the Rocky Mountain representative of the company.

* * *

George H. Jaques, general superintendent of the Midwest Refining Company, has returned to Casper, Wyo., after a trip of about 10 days to western Kansas and the Denver, Colo., offices of the company.

* * *

D. S. Bowers, general manager, W. C. Norris, manufacturer, visited the trade in Fort Worth and Houston, Tex., and sailed from New Orleans, La., on April 2 to contact the export representatives in New York City.

* * *

William B. Dickerson, of Wichita, Kans., a scout for the Indian Territory Illuminating Oil Company in the Kansas fields, and Miss M. Coleman, of Newton, Kans., were married last Saturday. The couple will reside in Wichita.

* * *

G. R. Stevens, in charge of Shreveport, La., activities of the Simms Oil Company, has resigned to operate independently, and Gene Morehead, scout, will probably transfer to Tyler, Tex., headquarters, remaining with the company.

* * *

The American Gas Association is sponsoring the nomination of its former president, H. C. Abell, of New Orleans, La., as a director of the Chamber of Commerce of the United States, to represent the natural resources production department.

* * *

G. C. Gester, assistant chief geologist of the Standard Oil Company of California, San Francisco, and E. M. Butterworth, geologist in charge of southern California, Los Angeles, have been looking over the West Texas holdings of the company.

* * *

John A. Watson, patent attorney, formerly of the firm of Wilson & McCanna, of Chicago, Ill., and later in practice at Baltimore, Md., has now associated himself with the development and patent department of the Standard Oil Company of Indiana at Chicago.

E. DeGolyer, president of the Amerada Petroleum Corporation, was in Tulsa last week in conference with officials of his company. It is understood that he stopped over en route to California.

* * *

V. Gerbereaux, engineer for the Worthington Pump & Machinery Corporation, returned to his office at Harrison, N. J., last week after a visit to Tulsa and other Mid-Continent offices of his company.

* * *

R. D. Wallace, of Casper, Wyo., head of the land department of the Prairie Oil & Gas Company of Wyoming, made a trip to Hot Springs, S. Dak., to look into the new oil developments in southwestern South Dakota.

* * *

Richard S. Gray (Uncle Dick), assistant general superintendent of the land department of the Prairie Oil & Gas Company, is resting easy at his residence in Tulsa. He was stricken in January and has been ill since.

* * *

J. J. Allison, foreign representative for the Arthur G. McKee & Company with offices in London, England, is spending several weeks in the United States. Much of the time is being spent at the company's offices in Cleveland, Ohio.

* * *

William B. Plummer has joined the research staff of the Standard Oil Company of Indiana at Whiting, where he will be concerned with problems relative to gas utilization. Mr. Plummer was formerly a research group leader in the Combustion Utilities Corporation of Linden, N. J., a subsidiary of the H. L. Doherty Company.

* * *

Sir Thomas H. Holland, K.C.S.I., K.C.I.E., vice chancellor of the University of Edinburgh, has been awarded the gold medal of the Institution of Mining and Metallurgy in recognition of his services to geological science and to the mineral industries, and of his researches and publications upon the mineral resources of the British Empire and their relationship to national and international problems.

* * *

L. W. Mann is now connected with the Deep Rock Oil Company doing production work on the Deep Rock leases in Andrews County, where the company has one producing well, the discovery well of the area, and is drilling three others. Mr. Mann comes from Marietta, Ohio, and has been in the oil industry for several years, spending three years of this time with the Sinclair Exploration Company in Africa.

* * *

C. L. Sutton, general superintendent of the American-Maracaibo Oil Company, Fort Worth, Tex., and Lee Capshaw, office manager of the company, have joined the R. H. Smith organization at Tulsa. The American-Maracaibo office at Fort Worth has been moved to Big Spring, Tex., near the Howard-Glasscock County Pools where the company has producing properties. B. F. Lefever will be in charge at Big Spring.

* * *

Edgar Kraus, geologist for the Atlantic Oil Producing Company at San Angelo, Tex., addressed a joint session of the Bureau of Economic Geology of the University of Texas and the Southwestern Geological Society in the main building of the university at Austin, on "Petroleum Geology as Practiced in West Texas." His appearance before the geological bodies in Austin was in an exchange of speakers with the West Texas Geological Society.

* * *

D. J. Moran, president of the Continental Oil Company, Ponca City, Okla., and a group of the company's executives have been spending several days in Dallas and Fort Worth, Tex., and making trips out over the various districts from Fort Worth. Among the 12 members of the visiting party were Thomas S. Lamont, New York, director of the Continental Oil Company, who is the son of Thomas W. Lamont, New York financier, associated with J. P. Morgan & Company; W. W. Bruce, executive vice president and secretary; E. J. Nicklos, vice president in charge of production; Walter Miller, vice president in charge of manufacturing; E. S. Karstedt, vice president in charge of marketing; Harry J. Kennedy, general sales manager; Frank Moore, special representative of the sales division; and Richard Jackson, transportation manager.

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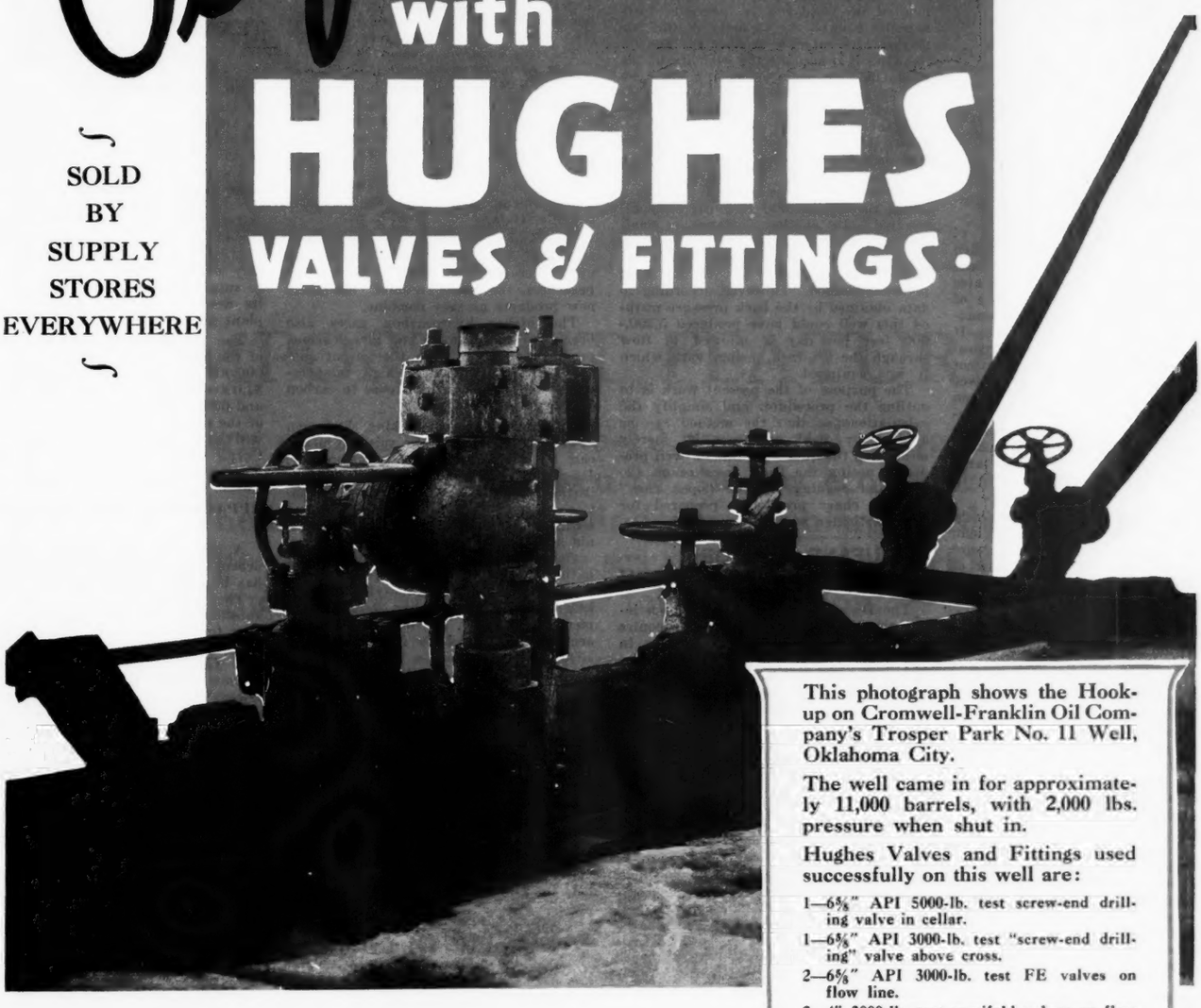

This photograph shows the Hook-up on Cromwell-Franklin Oil Company's Trosper Park No. 11 Well, Oklahoma City.

The well came in for approximately 11,000 barrels, with 2,000 lbs. pressure when shut in.

Hughes Valves and Fittings used successfully on this well are:

1—6⅝" API 5000-lb. test screw-end drilling valve in cellar.
1—6⅝" API 3000-lb. test "screw-end drilling" valve above cross.
2—6⅝" API 3000-lb. test FE valves on flow line.
2—4" 3000-lb. test manifold valves on flow line cross.
1—6⅝" API x 4" outlet type Z cross..

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# Natural Gas Developments

## GAUGING GAS WELLS IN THE DEPEW FIELD

It has been common practice for years to determine the capacity of a natural gas well by opening its control gate and blowing gas to the atmosphere. The actual estimate of the well's capacity is then made by inserting a pitot tube in the gas stream at the well head and noting the pressure developed with the pitot tube by the impact of the gas stream against the tube opening. By knowing the diameter of the well opening, and the pressure developed within the pitot tube, the delivery of gas, usually referred to as the "open flow" of the well, can be determined readily by reference to pitot tube tables. In all gas fields within the State of Oklahoma, open flow tests are made periodically according to the regulations of the State Corporation Commission.

Although the pitot tube method of gauging gas wells is fairly accurate when properly conducted, its principal disadvantages, according to the United States Bureau of Mines, are: (1) Waste of gas, resulting from releasing large quantities of gas to the atmosphere. (2) It is contrary to the object of the Corporation Commission rulings, which in effect specify that gas wells shall not deliver more than 25 per cent of their open flow. This ruling recognizes that deliveries of more than 25 per cent tend to injure a well. (3) It is a rather hazardous operation as the blowing of large wells to the atmosphere may result in fire.

It was this latter result that recently caused operators in the Depew Field, Oklahoma, to consider the back pressure method for estimating the open flow of gas wells. Open flow tests were being conducted in this field by order of the Corporation Commission. The fourth well tested caught fire, and as a result, the Petroleum Experiment Station of the Bureau of Mines at Bartlesville was called upon to demonstrate the recently developed method of estimating the open flow of wells without releasing any gas to the atmosphere. This method is described in two Bureau of Mines reports of investigations, Nos. 2,929 (Part 1) and 2,930 (Part 2), "The Study of Fundamental Basis for Controlling and Gauging Natural Gas Wells," by H. P. Pierce and E. L. Rawlins, issued in June, 1929.

The method in brief is as follows: The formation pressure against the sand is calculated from the shut-in pressure noted at the well head. The well then is permitted to produce at three or more different rates of flow by varying the back pressure on the well with a control gate. The rate of flow can be observed at pressures greater than 80 per cent of the formation pressure. The delivery at each pressure is measured by means of either an orifice meter or a prover, and the "open flow" is estimated by reference to a chart prepared from these data.

In the demonstration at the Depew Field 24 wells were tested by this method, and the results of 10 of these tests were checked by the pitot tube method. The 10 wells showed an open flow capacity of approximately 257,000,000 feet per 24 hours by the back pressure method and approximately 272,000,000 feet by the pitot tube method. The difference is less than 6 per cent and is considered a remarkably close check by those who witnessed the tests. It is possible for different pitot tube readings to vary this much. The tests not only satisfied the operators and the state officials, who witnessed the tests, that this is a practical method for estimating the open flow of gas wells, and that it has many advantages over the pitot tube method, but also new information was developed relative to the proper method of conducting the tests and calculating the results. Thus when one back pressure test on a particularly large well indicated a total open flow capacity of 380,000,000 feet per day, and the pitot tube test on the same well showed only 93,750,000 feet, a careful analysis was made, and it was concluded that the back pressure method as employed in previous tests actually showed the capacity of the formation penetrated to produce gas but did not take into account the capacity of the producing string in conveying this gas to the surface. A recalculation based upon the size of the producing string (6⅝-inch) brought the open flow capacity of the well down to 94,000,000 feet per day—a close check with the pitot tube method. With a sufficiently large casing, the well could have produced the 380,000,000 feet originally estimated. In another instance a small well producing through 2-inch tubing indicated 3,349,000 feet by the open flow method and 3,350,000 feet by the back pressure method. However, according to data obtained by the back pressure method this well could have produced 5,300,000 feet per day if allowed to flow through the 6⅝-inch casing, with which it was equipped.

The purpose of the present work is to outline the procedure, and simplify the calculations so that the method can be applied by field operators by merely measuring the quantity of gas a well produces, noting the back pressure on the well and reading off the "open flow" from a chart previously prepared for that particular well.

## DUQUESNE GAS CORP. FORMED IN PITTSBURGH

The Duquesne Gas Corp. has been incorporated in Pennsylvania to acquire and operate natural gas properties in Pennsylvania and West Virginia supplying gas under contract to public utility companies serving Pittsburgh and vicinity and to several large industrial concerns.

The properties are in Armstrong, Allegheny, Westmoreland, Washington, Greene and Fayette Counties in Pennsylvania. Additional gas reserves are controlled in Indiana County, Pennsylvania, and in Monongalia and Preston Counties, West Virginia. The corporation will control or own gas rights in more than 40,000 acres of land which last year produced more than 2,600,000,000 feet of gas. Over 99 per cent of all gas produced is sold under contract to large industrial enterprises and to leading public utility companies supplying the domestic and industrial requirements of Pittsburgh and vicinity. The properties are located within a radius of from 7 to 45 miles of Pittsburgh.

The customers of Duquesne Gas Corp. and its subsidiary include the Peoples Natural Gas Co. and Columbia Natural Gas Co., subsidiaries of Standard Oil Co. of New Jersey; Equitable Gas Co., subsidiary of Philadelphia Co.; Manufacturers Light & Heat Co. and Greensboro Gas Co., subsidiaries of Columbia Gas & Electric Corp.; State Line Gas Co., subsidiary of West Penn Electric Co., and Westinghouse Electric & Manufacturing Co. and its subsidiaries.

### A.G.A. COMMITTEES TO MEET

Engineers and chemists from all parts of the United States and Canada are expected to attend the fourth Joint Production and Chemical Conference, to be held under the auspices of the Carbonization, Water-Gas and Chemical Committees, Technical Section, American Gas Association, at the Cleveland Hotel, Cleveland, Ohio, May 21-23.

## MAY OBTAIN PERFUMES BY GAS DECOMPOSITION

Products ranging from artificial rubber, fruit ripeners, anesthetics, and motor fuels, to dyes, insecticides, explosives and perfumes may be obtained as by-products of natural gas, according to a statement issued by the Bureau of Mines. The products are obtained by decomposing the gas at high temperatures and then recombining its constituents.

The treatment of natural gas by pyrolysis, or decomposition at high temperatures, for the purpose of obtaining various commercial products, has recently received considerable attention, not only in this country, but among European nations. A study of the matter is being made by the United States Bureau of Mines and the State of Oklahoma at the petroleum experiment station, Bartlesville, Okla.

When methane is subjected to temperatures of 1,800 to 2,200° F. it breaks up or "cracks." At slightly lower temperatures the parts reunite, but form new products as they combine.

The higher hydrocarbon gases also break up and reunite to give various products different from the parent substances. At sufficiently high temperatures the gases will decompose to carbon and hydrogen.

In either type of cracking, hydrogen is always set free and by suitable means can be isolated and used commercially. Its major uses are as a reducing agent in the process industries, the hydrogenation of mineral and vegetable oils and coal; the synthetic production of ammonia and fertilizers; and as a refrigerant.

Other gases formed in the pyrolysis of natural gas are acetylene, butadiene, ethylene, propylene and butylene. Acetylene is used in welding and cutting metal; and may be used to prepare acetaldehyde, which is further used in silvering mirrors or in the preparation of medicinals, such as chloral, a soporific.

Butadiene, under proper treatment, condenses to form an artificial rubber having the same general composition as natural rubber. Ethylene has recently come into use in ripening fruits. It is also finding use as an anesthetic.

However, its major use at present is the synthesis of ethylene glycol, an antifreeze for water-cooled motors, and the basis for a series of important lacquer solvents. If desired, ethylene may be converted to ethyl alcohol, widely used as a solvent, also in the preparation of other compounds such as ether.

Again by the proper reaction with chlorine, ethylene chloride is formed. This is a valuable solvent, especially for fats and essential oils, and is also used as an anesthetic.

Propylene finds use as an anesthetic, and also in the synthesis of iso-propyl alcohol, which is being substituted for ethyl alcohol with good results in certain instances. Butylene is also used in the preparation of certain butyl alcohols which are finding use as solvents in the chemical industries.

The principal liquids formed in the pyrolysis of hydrocarbon gases are benzene, toluene and xylene. Benzene is a very valuable product and forms the basis of many chemical processes. Thus are obtained aniline and the entire series of aniline dyes, and many explosives, perfumes and medicinals.

In addition benzene is an excellent solvent and antiknock motor fuel. Toluene is the basis of the familiar T.N.T. (trinitritoluol), of dyes, and of saccharin, a sugar substitute 400 times as sweet as sugar. Xylene is similarly used in the synthesis of dyes and other products, and also to a large extent as a solvent.

The solids resulting from pyrolysis are chiefly naphthalene and anthracene. Naphthalene is well known as an insecticide in the form of moth balls. It is also the basis for the important indigo dyes. Anthracene is used in the synthesis of alizarin dyestuffs. Finally, under certain conditions of cracking, there is obtained carbon black, widely used in making ink, in compounding rubber, and as a pigment for paint.

## TEXAS GAS UTILITIES COMPANY ORGANIZED

The Appalachian Gas Corp. has organized the Texas Gas Utilities Co. as a subsidiary to construct and operate a natural gas distributing system in the southwest. The new company will control certain gas rights in about 215,000 acres of land in Maverick, Dimmit and Zavella counties.

The Texas Gas Utilities Co. also has signed a long-term contract with the Central Power & Light Co., a subsidiary of the Middle West Utilities Co., to supply the entire fuel requirements of its new central station electric power plant near Del Rio, Tex.

The initial outstanding capitalization of the new company will consist of $3,000,000 first mortgage 6 per cent bonds, $1,000,000 10-year 7 per cent gold notes and 600,000 shares of common stock. All of the notes and 75 per cent of the stock will be owned by the Appalachian Gas Corp., while the bonds will be publicly offered soon.

### APPALACHIAN GAS CORPORATION

A new issue of $2,500,000 6 per cent debentures by the Appalachian Gas Co. has been oversubscribed.

The Appalachian Gas Corp., through subsidiaries, supplies natural gas under long term contracts to United Fuel Gas Co. (subsidiary of Columbia Gas & Electric Corp.), Hope Natural Gas Co., Owens-Illinois Glass Co. and Libby-Owens Glass Co. It owns more than 99 per cent of the common stock of Ohio Southern Gas Co., more than 91 per cent of the outstanding common stock of Wayne United Gas Co., more than 83 per cent of the outstanding common stock of Ohio Valley Gas Corp., more than 59 per cent of the outstanding common stock of Ohio Kentucky Gas Co., and a substantial interest in the common stock of Allegheny Gas Corp. This group, it is stated, includes some of the most rapidly developing natural gas companies in the Appalachian Field, in which field are located the extensive gas pipe line systems controlled by Columbia Gas & Electric Corp., Standard Gas & Electric Co. and Standard Oil Co. of New Jersey. These interconnected gas pipe line systems together represent the most extensive gas pipe line system serving the largest connected natural gas market in the United States.

The properties owned or controlled by the companies in the Appalachian Gas Corp. group are located in West Virginia, Kentucky and Ohio—in the heart of the Appalachian Field. These properties include 372 gas wells, 313 miles of pipe lines, including gathering lines, and the gas rights in more than 200,000 acres of land, on over 160,000 acres of which the oil rights are also owned or controlled. The gas reserves of less than 50 per cent of the acreage have been reported to be approximately 125,000,000,000 feet.

### MID-WEST INDUSTRIAL COUNCIL

The next meeting of the Mid-West Industrial Gas Sales Council will be held at 10 a.m., April 18, at the Palmer House, Chicago.

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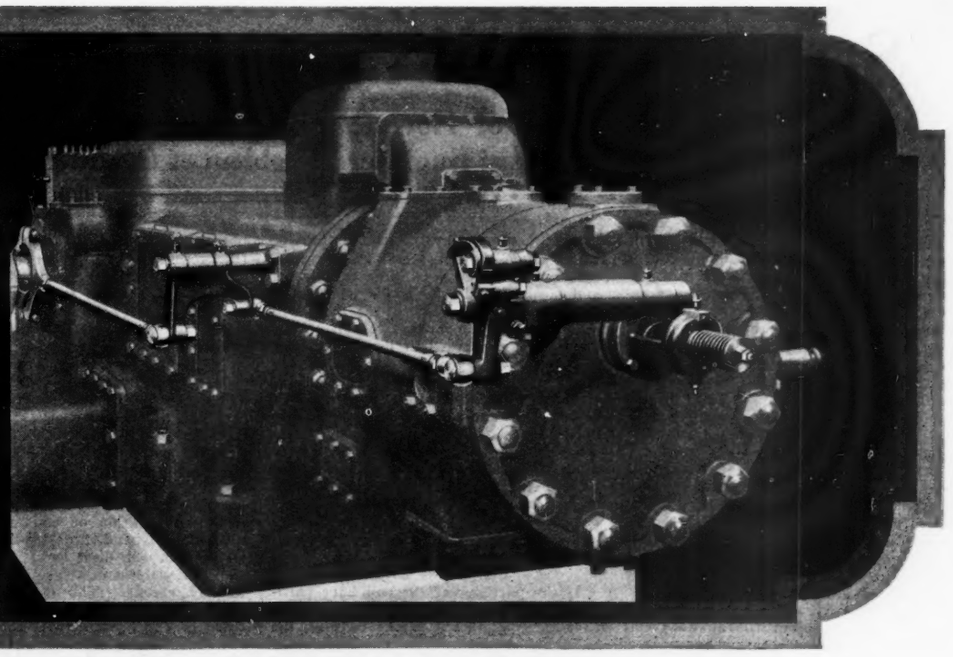

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# Study of Soil Action on Pipe Lines

## Question of How to Prolong Service Life Engaging Attention of Engineers. Problem of Coatings Considered

By Gordon N. Scott
A.P.I. Research Associate, United States Bureau of Standards*

The recent rapid expansion of the natural gas industry, the continual opening and development of new oil and gas producing areas, and the contemplated transportation of refinery products over great distances, point to a rapidly mounting mileage of pipe lines throughout the country. The question of how best to prolong the service life of this enormous actual and potential quantity of buried pipe has only recently commanded the attention that it has deserved from engineers.

Augmenting the importance of adequately protecting the pipe have been the recent tendencies toward thin walled pipes and the use of higher pressures. Pipe line operators on every hand are vigorously turning their attention to the protection of their buried property against the normal tendency of iron to corrode. The universal scheme has been to coat the pipe, but the methods employed and types of coatings used have varied considerably.

Two years ago the American Petroleum Institute placed a research associate at the Bureau of Standards to study coating practice and to study the behavior of coatings by examining a large number in the field. One of the most significant results of this investigation was the discovery that by far the larger part of the cases where the coating was unable to maintain the pipe corrosion-free was due to the preliminary mechanical disrupting effect on the coating of the soil itself. This dynamic influence of the soil which manifests itself in the distortion or disruption of the coating has been referred to as soil action. It is the purpose of this paper to explain the meaning of soil action and to show the relation between this disrupting tendency of the soil and the present expansive program of the Bureau of Standards for testing protective coatings.

### Distortion of Coating

Soil action is a term broadly used to describe the distortion or disruption which takes place on a protective coating which has been applied to a surface and buried in the ground. Distortion varies in pattern and intensity, and it is not always easy, or indeed possible, to identify the immediate cause or group of causes effecting the distortion.

Most coatings of the types ordinarily used are, of course, distortionable, and the extent to which they may be distorted depends upon their plastic or viscous properties as well as upon other factors presently discussed.

In the process of backfilling a trench in which a coated line has been laid, the soil is loosely piled on top of the pipe. Since the soil is rarely tamped in place, voids are left under the lower shoulders of the pipe. The degree of packing in the backfilled soil is very much less than in the undisturbed soil in the side walls of the trench. There is consequently a dual opportunity for the soil to settle. The speed of settling is greatly augmented by a thorough wetting of the soil. The soil, in settling, normally exerts stresses on the plastic coating, which yields and becomes distorted. A pipe line, contrary to what would be expected, is usually supported on the trench bottom along isolated areas. It is often possible in a bell-hole to insert the hand in the direction of the pipe's length for the full length of the arm between the pipe and the trench bottom. Whether this lack of continuous contact of the pipe with the trench bottom is due to the initial failure of the pipe to rest evenly on the trench bottom, or is due to the subsequent softening of the soil, because of the natural accumulation of water there, is not certain. However, the coating at the bearing areas may be, and most often is, badly distorted.

Soils as they exist in the field are normally dynamic in nature. They have the property, marked in highly colloidal soils, of swelling with an increase in moisture content and, conversely, of shrinking or contracting with loss of moisture. That soils do have a definite moisture coefficient of expansion is a familiar fact to those who have worked with soils. However, that this constantly changing volume condition in the soil, which follows the gain or loss of moisture, was capable of exerting severe stresses on the coating has only recently been pointed out.

### Soil Stress Effect

If the particles of the soil have sufficient cohesive strength and if the soil, in addition, adheres to the coating, the distortion which results may be greatly increased. These two properties of cohesion and adhesion in conjunction with the alternate expansion and contraction of the soil give rise to the many interesting distortion conditions, which are so often observed on coatings in the field. The particular set of properties enumerated above give rise to what has been referred to specifically as the "soil stress effect."

Under certain conditions the cohesive and adhesive properties of the soils are not essential in bringing about distortion. This is true if the soil's moisture coefficient of swelling is sufficiently large. In the process of swelling cohesion and adhesion are of little importance; whereas in the process of contraction these two properties may very materially affect the character and degree of distortion as hereinafter explained.

Assume for a clayey backfill, piled along the edge of the trench wall, that the soil has become well dried, due to a prolonged exposure to the sun, in various size lumps or small particles. When the soil is backfilled, the small lumps or clods of soil adjacent to the pipe are partially embedded in the coating, either because of the force of fall or because of the weight of the soil above. When these lumps or clods become moist, due to the infiltration of moisture as from rain, they expand, thus tending to exert stresses in all directions. The expansion obviously cannot take place upwards to any extent. The excess expansion stresses, not relieved by the inherent voids of the backfill, are diminished at the expense of a movement in the plastic bitumen. (There is consequently much theoretical justification for the use of loosely applied wrappers over otherwise unprotected bituminous coatings. These loosely applied wrappers tend to prevent clods embedding in the coating and to allow the soil to expend its initial settling and expanding energy. Such loose wraps have only recently been applied over bituminous coatings, and their protective behavior has not been noted by the author in a sufficient number of cases to warrant drawing any conclusions.) If, however, the soil adheres to the coating, a subsequent drying causes the coating to be pulled entirely away from the pipe, providing the coating-pipe bond is weaker than the soil-coating bond. If, on the other hand, both the soil-coating and coating-pipe bonds are good, the adhering soil has been observed to split the coating which then assumes a honeycomb structure.

The reality of the soil stress effect is demonstrated in a number of ways. In the field the severely distorted condition of some coatings under thin earth layers (1-inch or less) preclude the possible effect of the settling of the backfill. The complete removal of the coating from the pipe with dried earth clods, the excellent bond, in such cases, of the soil with the coating and the honeycomb structure of the coating material in certain clay soils are effects not attributable to the settling of the backfill. In the laboratory numerous distortion patterns, which have been discovered in the field, have been reproduced on coated panels covered with a very thin, wet soil layer which has been allowed to dry.[1]

### Temperature Changes

A further effect, which may have some influence on the mechanical disruption of a coating but for which positive evidence is not available, is that due to the expansion and contraction of the pipe line because of temperature changes. In the case of an uncoated line the grip of the soil on the pipe may be such as to prevent movement of the pipe, and temperature changes would thus produce stresses within the walls of the pipe itself without the accompaniment of strain. However, there is the possibility of a sleeve-like action of the pipe within a coating, and the lateral strain lines which have been noted on some coatings may be an indication of this effect.

Many attempts have been made to devise suitable tests for protective coatings which would predetermine the behavior of the coating under field conditions. Obviously any method which ignores the dominating importance of soil action would be incomplete. However, the various schemes, tried and used to some extent, do have very definite value.

In the laboratory the most common type of measurement depends upon the estimation of the "pin holes" in the coating and their development with time. The electrical resistance of the coating is commonly supposed to be a measure of the importance of these pin holes, or points, through which the infiltration of corrosive liquors is possible.

The work of the A.P.I. research associate has demonstrated that in contemplating the behavior of a coating in the soil two natural destructive agencies must be taken into account. These are (1) the soil's inherent corrosiveness, which may vary for different soils between the limits of practically noncorrosive to highly corrosive, and (2) the soil's destructiveness towards the coating itself. Thus an infinite number of combinations of the two destructive characteristics of the soil are possible. An important case is one in which a highly corrosive soil may be innocuous so far as the coating is concerned. In such cases it may be reasonably supposed that the so-called pin hole or porosity measurements will satisfactorily define or order the behavior of various coatings. But the correctness of the supposition has not been demonstrated.

### Interesting Experiments

Recently two interesting experiments have been conducted in which the idea of soil stress has been combined with the electrical measurements of porosity. Few

*Before American Gas Association, Distribution Conference, St. Louis, Mo., April 9.

[1]Note—For a more complete description of the mechanical effects of the soil on coatings, attention is drawn to the reports of the A.P.I. Research Associate in the Proceedings of the American Petroleum Institute, Vol. X, No. 2, 1929, and Vol. XI, 1930.

# OPERATOR DISCUSSES ECONOMICAL OPERATION OF SMALL GAS WELLS

By H. H. Phillips
T. W. Phillips Gas & Oil Co., Butler, Pa.*

The small gas well constitutes a large portion of the production of our company, and probably this is more or less true with the majority of other companies in western Pennsylvania; therefore the operation of small gas wells is very important. The question of how long an individual well can be maintained, or how small a well must be before it is necessary to abandon it, depends directly on how much it costs to operate it.

Royalty is a fixed charge against each well. Therefore, the form of the lease is of primary importance. The lease calling for a fixed royalty on each well, regardless of size, is not noticed so much when the well is producing a fair amount of gas, but when the production declines to such a point that there is a question of keeping the well, or the initial production is small, the amount of royalty becomes a real factor. The graded form of lease, by which the royalty is based upon the size of the well, is most desirable as it avoids the necessity of endeavoring to secure a reduction of the royalty.

Reductions are frequently difficult to obtain. The company is the only one having any capital invested in the well, and is the only one to take the immediate loss in case the well is plugged. Also, it is endeavoring to change a bargain offered by itself, and in endeavoring to do so there is often an ill feeling created with the landowner. Further, if the owner of the property is away, or the property is in the hands of a number of heirs, a reduction may be impossible.

The meter type of lease, due to the difficulty and expense in maintaining a meter, is out of the question, as it places upon the small well too much of a burden for it to carry. Another feature in the lease which is essential in the operation of the small well is the limiting the use of free gas to a reasonable amount, as unlimited free gas has proved to be very wasteful and costly, and in some cases it has caused the abandonment of small wells.

It might seem that too much emphasis has just been placed on the question of royalty and free gas, but if one considers that the small well covered in this paper includes a great many wells that are delivering between 5,000 and 10,000 feet per day, one can realize this question may account to a large extent for the margin which justifies keeping the well.

In operating in the field, a frequent check of the well is important. Once a month a man should go to the well and gauge it. Each gauge should be taken for a regular period, say 30 minutes, and can be taken either above line pressure, or after blowing off. In case the well is blown off, the gas can be lighted and the condition and size of the well approximately judged by the size and regularity of the blaze. If the well is so small that there is a question of whether to keep same or not, it should be tested by meter against line pressure for a period of two or three hours, or more. The gauge should be made in duplicate, one copy being retained by the gauger, the other forwarded to the office. A permanent record of some of these gauges should be kept, which will show

(Continued on Page 116)

*Before American Petroleum Institute, Production Division, Eastern district, Pittsburgh, Pa., April 7.

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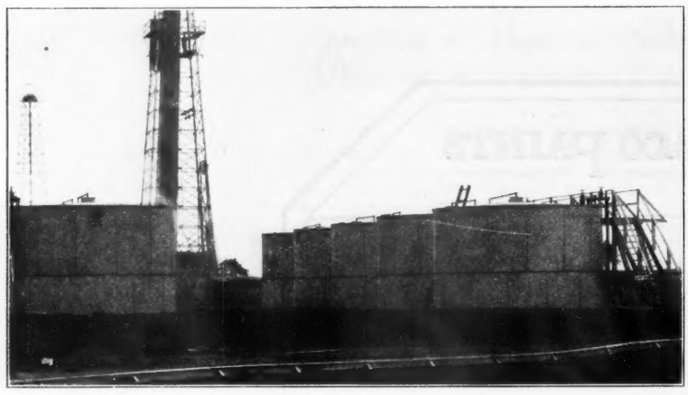


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results have been reported; but the mere fact that soil stresses have been artificially induced to simulate field conditions is of considerable interest since soil action is a dominating influence which contributes to the ultimate failure of the coating in the field.

The socalled graveyard tests, as ordinarily conducted, are subject to criticism in the light of soil action and the independent corrosive quality of the soil since the coated nipples are usually buried in what may be termed a "single soil circumstance." Unless the corrosiveness of the soil, and the destructiveness of the soil with respect to the coating, are understood and considered separately, and the results of the nipple tests interpreted accordingly, false conclusions are very apt to be drawn from the tests. It is not inconceivable that radically different conclusions will be drawn with respect to the relative values of a given series of coatings by independent observers employing local graveyards.

The importance, therefore, of conducting a series of graveyard tests to include a number of environments is obvious. Such a series of tests has been undertaken by the American Gas Association with the co-operation of the Bureau of Standards. These tests will afford ample opportunity to study the various kinds of coating materials and differences in structural design, or mode of application, of sundry coatings in relation to their behavior under various field conditions; and further to study the relation of their behaviors to laboratory measurements. There will remain, however, the question of the probable behavior of these various treatments on operating lines under field conditions. No one, to the author's knowledge, has directly compared the behavior of a particular treatment on a nipple with the same treatment on a line. It is reasonable to suppose that coatings on nipples are not, in general, subject to as severe mechanical distortion as are coatings on a line.

**Testing Coatings**

The most desirable method of testing protective coatings is to apply the coatings on operating lines since the coatings are thus subject to the full conditions of service. Such tests, however, are expensive and for this reason tend to restrict the number of sites and the number of coatings tested. Obviously, for maximum information, tests on protective coatings should be reasonably comprehensive, both with respect to the coatings tested and to the service conditions.

The American Petroleum Institute has initiated such a series of line tests to be undertaken by the Bureau of Standards in close co-operation with pipe line operators and manufacturers of materials used for protective coatings. Broadly stated, the main objective of the A.P.I. tests is "to inject engineering principles into the design and selection of protective coatings on underground pipe lines." It is proposed to utilize approximately 1,000 feet of line in each of 10 or more locations which vary considerably in destructiveness of the soil both as to pipe and coating. The tentative plans demand that a group of approximately 10 coatings appear unchanged in character throughout the selected sites. Each coating tested on the line will also be tested on nipples buried adjacent to the line. Coatings similar to or of the same class as those duplicated on both line and nipple will also be tested on nipples.

The Bureau of Standards present co-operative program of studying protective coatings for underground pipe lines amply covers the more important elements of the problem. The American Gas Association has made it possible, by its nipple tests, to correlate laboratory methods of investigating protective coatings with field tests on short sections of pipe and to study methods of rating coatings in the order of their probable behavior in the field. The American Petroleum Institute tests, on the other hand, are intended to discover the value, under operating conditions, of the element of design or structural modification in the coating in favorably affecting the behavior of the coating. These tests should make clearer the causes of failure. They give promise, further, of yielding data with which to define the range of service conditions within which the use of a particular type of treatment is limited on economic considerations. The Bureau of Standards, through the co-operation of the gas and oil industries, is thus afforded an opportunity of carrying over laboratory measurements to actual field conditions through the intermediate stage of coated short sections of small diameter pipe.

## OPERATORS DISCUSS ECONOMICAL OPERATION

(Continued from Page 112)

the approximate decline of the well, and if there are any unusual variations in the gauge, it is a signal to look for trouble such as water, cavings or a bridge.

Water is the chief source of trouble in a small well, and it is necessary to remove same without delay, for if allowed to stand for any length of time, it is detrimental, perhaps disastrous, to the producing sands of a well—particularly if the producing sands are the deep formations, that is, below the Fifth sand. In removing water or locating trouble in a well, it is necessary to run into the well, and this can be done with a portable bailing machine. A reel, mounted on a small truck, together with a mast consisting of a joint of 3-inch pipe with a pulley on top, has proved to be very satisfactory for light work. A reel mounted on a tractor, has the advantage of being able to get into more inaccessible locations and handle heavier jobs, but its speed on the road is slower. With wells which make so much water so as to require bailing six or eight times a year or oftener, it is usually cheaper to install a permanent bailing outfit or a pumping outfit. A pumping outfit, the same type as is used at oil wells, requires a larger investment than the bailing outfit, and there is a certain amount of trouble with the valves, cups, rods and tubing. In the case of a deep well it is quite expensive to pull tubing and rods if the well is not pumping properly. The advantage of using a pumping outfit instead of a permanent bailing machine is that there is a saving of gas during the time it takes for bailing. With the heavier work at wells it is necessary to use a drilling machine.

The small well should be used as nearly as possible all the time. The depreciation of investment, overhead and pipe line leakage are carrying on day and night, Sundays and holidays included, and the amount of gas delivered each day by the well is generally so small that to justify keeping it the total production throughout the year must be obtained. Also in the case of many small wells, if anything goes wrong it will never pay to move in and endeavor to put the well in shape, and on this account the gas should be taken out as rapidly as possible. It is therefore desirable that a comparatively low line pressure be maintained, as it is the small well that usually has the low rock pressure.

In general, each small well must be handled individually, taking into consideration the production, the investment, the royalty and free gas, the amount of pipe line to the well and the expense in handling; and, to summarize the essentials necessary:

First—Proper form of lease.

Second—wells kept in condition to produce all the gas they are capable of producing.

Third—The use, all, or a large portion of the time.

## FOREIGN INVITATION TO OIL EXPOSITION

Senator Pat Sullivan of Wyoming has written to President W. G. Skelly of the International Petroleum Exposition that he will give attention to the joint resolution before Congress authorizing the President of the United States to invite the states and foreign countries to participate in the oil exposition to be held in Tulsa next October.

# VALUE OF "BREATHER" ROOF FOR REDUCING EVAPORATION LOSSES

In the course of a general study of the prevention of evaporation of crude oil and gasoline, tests on an 80,000-bbl. storage tank equipped with a "breather roof" have been conducted in the Seminole area in Oklahoma by the United States Bureau of Mines in co-operation with the State of Oklahoma.

Ludwig Schmidt, petroleum engineer, in a report of these tests says a recent development in tank construction is a new type of tank roof known as the diaphragm or "breather roof," which practically eliminates the movement of air-vapor mixture from a storage tank filled with oil. It is of especial value for use on tanks in which oil is stored over long periods.

The factors which influence the rate of evaporation of a given liquid are: Temperature of the surface of the liquid, quantity of vapor in the atmosphere in contact with the liquid, area of evaporating surface, and renewal of air over evaporating surface. Assuming that other conditions are equal, the amount of evaporation of crude oil in storage tanks will be most greatly influenced by two factors; first, the vapor pressure of the liquid which governs the amount of gasoline vapor in the vapor-air mixture above the oil surface at a given temperature. The second factor is the "breathing" of the tank, the expulsion of vapor-air mixture from the tank during certain periods and the inflow of air from the atmosphere at other times. This breathing is caused principally by atmospheric variations, although there are other factors, such as diffusion, which have some influence on the movement of air or air-vapor mixtures from storage tanks. Generally, the effect of atmospheric variations on the oil surface and vapor-air temperatures is the greatest factor in causing a vapor-tight tank to breathe. Therefore, a vapor-tight cone or dome roof is breathing more or less constantly.

Breathing of storage tanks is greatly reduced by the use of water sprays, insulation, and other cooling devices, of light colored paints and by the use of vacuum and pressure relief valves in various combinations of the above methods.

Even with many of these improvements the breathing losses from large storage tanks containing highly volatile crude oil or gasoline are of sufficient value to warrant additional expenditures to reduce these losses still further. The average loss for six months from four 55,000-bbl. all steel tanks with welded roofs and low-pressure vent valves in the Seminole area was 0.7 per cent of the total volume stored. This represents a loss of about 364 bbls. per tank for the period, or about 700 bbls. per year.

The breather roof is an all-steel welded or riveted roof which slopes downward from its outside circumference toward the center for a short distance and then is level to the center. It forms an inverted frustum of a cone with an altitude of about 8 inches. In an 80,000-bbl. tank (117 feet in diameter) this roof slopes downward from the outside circumference for about 20 feet toward the center and then is practically level to the center. As the roof is attached to the tank around the top angle only, it is in reality a large diaphragm which upon expanding assumes a dome shape. The amount of rise at the center is 24 to 26 inches in a tank 117 feet in diameter. In smaller tanks the rise is less; for example, in a tank 60 feet in diameter the breather will rise about 20 inches at the center.

The value of this roof in reducing evaporation losses is shown by comparing it with a tank equipped with a standard conical roof with a pitch of one-half inch per foot. In an 80,000-bbl. tank equipped with a conical roof and filled with crude oil to within 8 inches of the top, the vapor space above the surface of the crude in the tank would be about 11,600 cubic feet. Assuming a temperature variation of 40° F. during a 24-hour period, the increase of volume due to temperature alone would be about 900 cubic feet, which means that during the period of rising temperature 900 feet of gasoline-laden vapor would be forced from the tank to the atmosphere, and a like amount of fresh unsaturated air would be drawn into the tank during the period of falling tempreature. It must be remembered that the breathing of a tank is not alone due to variation of the temperature of the vapor space, but also is caused by variation in atmospheric conditions such as barometric pressure, variation in wind velocities as well as changes in vapor pressures of the liquid surface, and variation in the volume of the liquid due to changes in temperature. These combined effects would greatly increase the amount of the "breathing of the tank" over that calculated solely from the temperature changes of the vapor space.

Under the same conditions an 80,000-bbl. tank equipped with a breather roof and filled to within 8 inches of the top so that the roof just rested on the surface of the oil, would have a vapor space above the crude of about 2,800 cubic feet. Assuming an increase in temperature of 40° F. during the 24-hour period the increase of volume due to temperature alone would be about 224 cubic feet. Since the expansion of the roof allows for a total vapor space of 12,000 cubic feet above the oil surface it is evident that there is more than enough additional space available to take care of all breathing due to the temperature variation in the vapor space, as well as breathing caused by the change in the vapor pressure of the average crude oil. For example, assuming the vapor pressure of a given crude to be 3.8 inches of mercury at 70° F. and 6.5 inches of mercury at 110° F., then the increase of volume of the tank vapors due to increase in vapor pressure above would be about 9.2 per cent.

The first 80,000-bbl. tank equipped with a breather roof tested by the Bureau of Mines has been in operation over 2½ years and is apparently giving good service. During those periods covering the hottest portion of the year the evaporation losses were negligible, the expansion or contraction of the vapors in the tank being compensated by the flexibility of the diaphragm type of roof.

To obtain the fullest benefit from this type of equipment, the tank should not be opened for gauging or inspection except during the cooler periods of the day when the roof is resting upon its rafters or upon the surface of the oil, unless it is equipped with a gauge well. In addition, regular periodic inspections should be made of the vacuum and volume control valves.

Since this type of construction is vapor-tight and all-steel, the fire hazard is no greater than that of any all-steel vapor-tight tank. If the tank is filled to capacity and the roof is in contact with the surface of the liquid at all points, the fire hazard should be less, as there is no appreciable vapor space above the liquid surface.

## OPERATE SHALE PLANT

NEW YORK, Apr. 7.—The South Manchuria Railway Co. has placed its shale oil plant, which has been under construction for the past 22 months, in operation. The plant is producing 1,500 tons of crude oil, with potential output of 6,000 tons monthly by the middle of the year as additional units go into operation.

The shale is mined at the colliery of the railway at Fushun, Manchuria, by the open-cut method. The oil share is processed with a modification of the old Scotch distillation method.

Laboratory experiments, it is stated, have shown the feasibility of extracting a volatile oil worth 100 yen per ton, a by-product of the paraffin extraction process.

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*Wall Manila*
*Rope plain laid*

# Exterior Painting in the Oil Fields

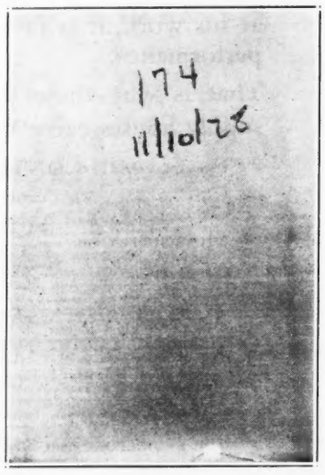
## Difficulties Encountered in Petroleum Industry Not Normally Found in Painting Practice. Causes of Deterioration

By John W. Iliff
Central Technical Laboratory, Paint and Varnish Division, E. I. du Pont de Nemours & Co., Inc.

Painting wood in the petroleum fields offers some difficulties which are not normally encountered in ordinary paint practice. These difficulties are due primarily to a combination of conditions existing in the petroleum industry. Each of these conditions is met frequently in ordinary paint practice but this particular combination of conditions is not common in other industries.

The first and most outstanding condition which must be met by paints designed for petroleum field use is that hydrogen sulphide gas is prevalent in many producing areas and, therefore, the paint used must be resistant to the action of this gas. Lead pigments will react with hydrogen sulphide to form lead sulphide which is black or very dark brown in color. This means that any paint containing considerable quantities of lead pigment will be subject to darkening under the action of hydrogen sulphide.

*Type of paint failure when applied to yellow pine.*




*White pine panel painted and exposed to climate.*

*The difference in paint failure between yellow and white pine. Except for the difference in woods these exposures are identical.*

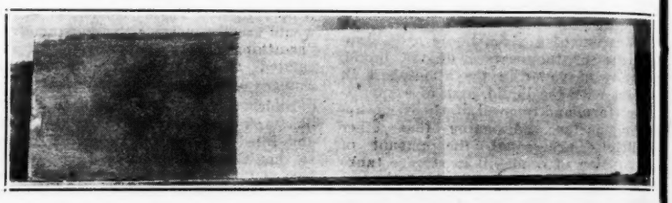
The most common exterior pigments for prepared paints are compounds of lead and the most common white exterior pigment in general use is basic lead carbonate. It is, therefore, necessary to depart from ordinary paint practice in the formulation of paints for petroleum field use. Both the whites and tints should, if possible, avoid the use of white lead and the most satisfactory answer to this is a correctly formulated lithopone paint. A satisfactory exterior lithopone paint, however, is not as easy to make as a satisfactory lead-zinc paint although when the product is correctly made, it has durability which is quite comparable to a first grade lead-zinc paint.

It is also desirable to avoid the use of the lead chromates in the green and yellow tints. Corresponding zinc compounds are available and yield very satisfactory results. This combination of lithopone paints in whites and lithopone base for tints makes strictly lead-free products possible which will not darken under the action of hydrogen sulphide fumes, and the paint consumer in the petroleum field need not fear that the necessity for lead-free pigments will necessarily handicap the ultimate durability of the paints that he purchases.

### Difficulty from Woods

The second condition existing in the petroleum field which offers difficulty is that yellow pine or similar woods are used almost exclusively for exterior work. Yellow pine and woods of this nature are particularly difficult from the standpoint of the durability of the paint applied to them. They are characterized by relatively wide rings of spring and summer wood. Moreover, there is a wide difference in density between the spring and summer wood rings. As a result, the uniform adhesion of the paint to the wood is lost after the paint has been exposed to the weather from three to four years. It is not uncommon, therefore, to see the best grades of paint scale from yellow pine siding while the same paints applied to white pine, or still better, red cedar, show much greater durability. The supply of lumber available not only in the petroleum industry but also in many other fields indicates that the frequency of the use of yellow pine and similar woods in exterior work will increase rather than decrease. This problem, therefore, is not only serious in the petroleum industry but will become increasingly serious in wood painting throughout the country.

Many attempts have been made to overcome the difficulty obtained with yellow pine or similar woods. Some improvement can be made by painting and exposing only the sap side of the wood to the weather. The reason for this is that on moisture fluctuations the grain on the heart side will tend to rise from the surface while on the sap side it will tend to press into the surface.



*The effect of hydrogen sulphide on different white paints. The left section is white lead, the center lead-zinc and the right section is lead-free paint designed for petroleum field use and is unaffected. This panel has been subjected to moist hydrogen sulphide fumes.*

An extensive series of tests in an effort to overcome this difficulty of painting yellow pine and similar woods shows that aluminum paint used as a primer largely overcomes this difficulty. The ordinary metal protective type of aluminum paint, however, is not recommended for this purpose but a treated drying oil vehicle should be used for the aluminum.

### Causes of Peeling

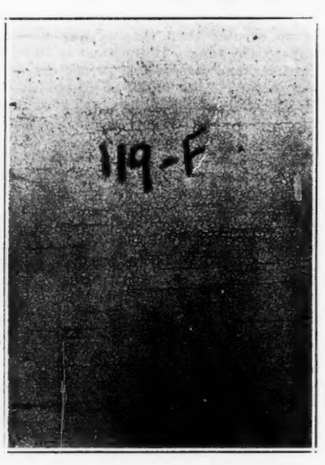
In this connection, it is worth while to mention a difficulty which is common to all wood painting. Peeling is frequently encountered in all parts of the country and particularly on houses of the speculative type. Peeling is the separation of the paint in large sheets from the surface while the paint film is still flexible and this peeling is due almost wholly to the presence of moisture behind the paint film. The presence of moisture is probably due to improper construction, improper drainage or damage to the original construction. Otto Hartwig, in Circular No. 355, of the Scientific Section of the Educational Bureau of the American Paint and Varnish Association, has covered this problem very thoroughly.

### Effect of Weather

A third factor in the difficulty of maintaining a satisfactory paint job in the petroleum field is that very severe weather conditions are encountered in the different areas and, moreover, the relative intensity of the different weather factors causing paint failure varies widely. The failure of an exterior paint is primarily due to a combination of ultra violet from the sun with wide moisture and temperature fluctuations. These exterior influences cause the eventual disintegration of the paint film. This disintegration is known as oxidation but it is doubtless accompanied by other chemical changes including saponification of the vehicle by the more active pigments. When the relative intensity of these different factors varies we find different grades and different types of paint failure. For example, on the Gulf Coast the sunlight is intense but the temperature and humidity fluctuations are relatively slight. In the average eastern climate we find quite considerable fluctuations of humidity and temperature with moderate sunlight. In the western part of Canada, we find wide fluctuations of temperature and humidity with moderate sunlight. In West Texas and Colorado we find strong sunlight combined with wide fluctuations of temperature and humidity. This portion of the field, therefore, yields the most difficult problem and a paint to be satisfactory for general use must be satisfactory in the most difficult locality.

Of course, the difficulties listed above are not unsurmountable. As a matter of fact, if the directions of the paint manufacturer are accurately followed, satisfaction may be expected even under the most severe conditions. We have endeavored to indicate, however, some of the conditions which the paint manufacturer must consider before supplying the paint.

*Effect of Colorado climate on paint indicating a badly flaked condition.*




*The effect of Delaware climate on paint showing definite flaking.*

*Florida climate caused a severe chalking of paint exposed in that area.*

*The effect of different climates on paint durability. The same paint and wood was used and exposed for the same length of time.*

# Strong steam trap on pre-heater

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# Soil Characteristics and Corrosion

## Study of Soil Conditions in Correlation With Degree of Corrosion Expected to Furnish Valuable Information

By I. A. Denison
Associate Chemist, U. S. Bureau of Standards*

Investigation of soil corrosion of pipe line materials has indicated that the nature and extent of corrosion is characteristic of various soils. The factors which induce corrosion in different soils, however, are understood only in a general way. For this reason, methods of predetermining soil corrosiveness based on measurement of corrosive factors remain of uncertain value until they have been tested by field experience over a period of years. Although study of the factors in corrosion will lead ultimately to suitable methods for detecting corrosiveness, the present need for information in regard to corrosive and noncorrosive soils seems more likely to be met by correlating corrosion experienced in pipe line operation with certain characteristics of the soils in which pipes are laid.

If, for instance, it can be shown that corrosion is associated with certain soil characteristics along a given pipe line, then corrosion might be expected to occur in other areas where scils of similar characteristics are found. Hence, study of soil conditions along individual pipe lines should lead to results of somewhat general application. An additional advantage of the method of correlation is that it provides a means of isolating those factors which induce corrosion in a given locality.

The present investigation was undertaken to determine: First, whether a relation obtains between the various soils occurring along a certain pipe line and degree of corrosion; and, secondly, to determine the chief factors responsible for corrosion along the line. This study was made possible by the fact that a detailed record of pipe replacements has been kept by the company operating the line. An accurate measure of the corrosion which has occurred in different sections of its lines was available for comparison with soil type.

### Relation of Corrosion to Soil Type

The field work in this investigation was carried out on a 32-mile section of a group of pipe lines in the southeastern Great Lakes region. The lines run parallel at an average distance of one foot apart, and from 18 to 24 inches in depth. Corrosion has not been general over the lines, but has occurred chiefly in restricted areas. In certain sections of the lines several thousands of feet of pipe have been replaced two or three times; in other sections no replacements have been made since the lines were laid, in the case of the oldest line, more than 40 years ago. The individual lines also show great variation in the extent to which they have been replaced, one line in particular having required but few replacements in certain areas where the other lines were rather severely corroded.

The highly localized character of corrosion on these lines suggested that the soils in the corrosive and noncorrosive areas might differ widely in various field and laboratory characteristics. A soil survey of the region showed that the distribution of the soils was in fact very complex, soils within a distance of less than 1 mile often ranging in texture from a heavy clay to a sand, and from an alkaline to a somewhat acid reaction. Whether a relation obtains between kind of soil and corrosion could be determined by comparing the areas differing in corrosiveness along the lines with areas representing different soil types. If the respective areas should coincide it would be reasonable to assume that the corrosiveness of an area was largely dependent on the type of soil present.

Accordingly, the boundaries of the different soils occurring along the line were noted by stake number, and the quantity of pipe replaced in distances of 1,000 feet were recorded. By plotting the areas occupied by the different soils on the horizontal axis and the percentage of pipe replaced on all lines for each 1,000-foot interval, a diagram is obtained from which comparison can be made between the kind of soil and degree of corrosion which has occurred in that soil.

### Diagram Explained

By referring to the figure it will be seen that the boundaries of certain soil series correspond generally to the corrosive and noncorrosive areas as indicated by extent of replacement. Thus it can be seen that areas of Brookston soil, indicated by the letter B, correspond to relatively noncorrosive areas; whereas the areas mapped as Nappanee and indicated by the letter N are corrosive. Similarly it will be noted that the areas of sandy loam soils and of lime outcrop correspond to relatively noncorrosive areas. It is important to note in considering the degree of correspondence between soil type and corrosion shown in the figure that at various points on the lines replacements have been necessitated by factors external to the soil. Thus between the points representing 129,000 feet and 131,000 feet the extensive replacement indicated was caused by change in the right of way of the railroad adjacent to the pipe lines. Similarly, the corrosion indicated by the replacements between the points 133,000 and 134,000 are the result of the presence of the pipes in a river, not of soil corrosion. A further instance of these external corrosive forces is to be noted between the points 108,000 and 109,000. Here the corrosion has been due evidently to the presence of cinders from a lime plant now abandoned.

An exception to the general relation between soil type and corrosion is to be noted in the case of the soil mapped as Wauseon. It will be observed that between stake numbers 13,000 and 18,000 the Wauseon soil is very corrosive; whereas between stake numbers 160,000 and 165,000 the same soil is but slightly corrosive. It would appear, therefore, that this soil may be subject to variation in certain characteristics which determine its corrosiveness.

### Relation of Soil Acidity to Corrosiveness

It has been seen that the various soils present along the pipe line differ greatly in their corrosiveness, the Nappanee soils, for instance, being typically corrosive while the Brookston soils are noncorrosive. It is now important to inquire what characteristic features of the various soils determine their corrosiveness or noncorrosiveness. It would appear from the fact that the corrosive Nappanee soils are characteristically acid in the upper subsoil while the Brookston soils are neutral that acidity is the primary cause of corrosion in the area. It seemed probable, therefore, that a quantitative expression of the relative corrosiveness of the soils along the line would be afforded by determination of acidity.

The method employed in determining total acidity consisted in the replacement of the unionized hydrogen in the soil colloidal material by the barium ion and measurement of the total hydrogen by titration with standard alkali. The details of the procedure follow.

A 50-gram sample of soil contained on a 15-cm. filter paper is extracted with normal barium acetate solution which had been brought to exact neutrality, namely to pH 7. The filtrate, usually from 400 to 500 ml. in volume, is titrated to pH 7 with tenth normal barium hydroxide using brom thymol blue as the indicator. The extraction process is then continued until 50 ml. of salt solution filtered through the soil requires not more than 0.2 ml. of alkali to produce neutrality. Complete extraction of hydrogen ion from the soil is usually made within 24 hours. Owing to the highly buffered nature of the solution, the endpoint of the titration is somewhat difficult to recognize. This difficulty, however, can be largely overcome by controlling the pH of the solution near the endpoint by the usual colorimetric procedure. The data are expressed in milligrams of hydrogen per 100 grams of soil.

The data obtained from acidity determinations on nearly 100 soil samples taken at various points along the lines are shown in the figure.

### Values for Acidity

Comparison of the percentage replacement of the five lines within 1,000-foot intervals with the quantity of ionic hydrogen present in the soil samples taken within corresponding intervals shows that a general relation obtains between corrosion and total acidity. In the very corrosive areas between stake numbers 10,000 and 28,000 and between 150,000 and 160,000 the highest values for acidity are obtained. In certain other areas where few replacements have been made the soils show little if any acidity. In comparing the data on acidity and replacements it is necessary to take into account certain factors which are either external to the soil or which are not evaluated by the method used. These factors, previously referred to, account for corrosion between stake numbers 108,000 and 109,000 between 129,000 and 131,000 and between 133,000 and 134,000. The lack of correspondence between acidity and replacement between stake numbers 95,000 and 96,000 indicates that in areas of good drainage acid soils are not necessarily corrosive.

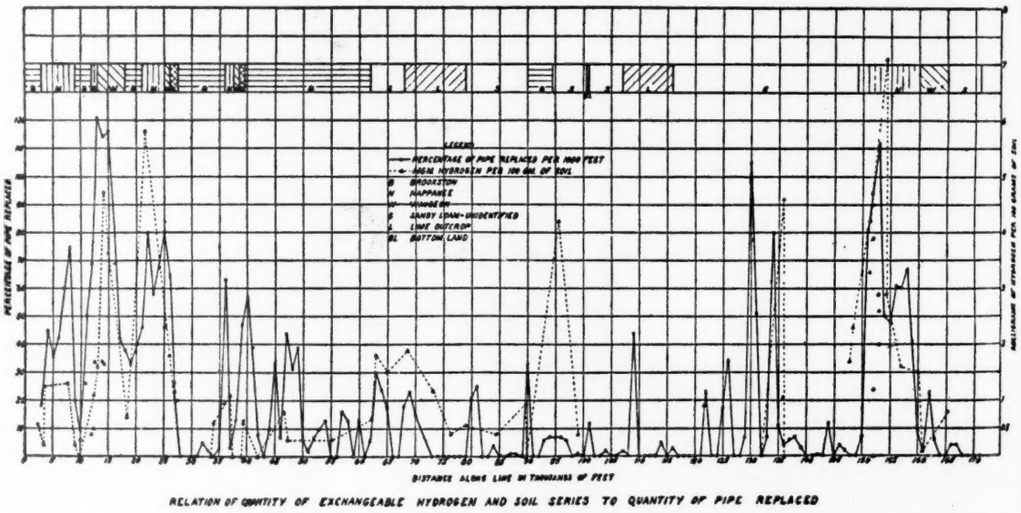
Although a general relation between acidity and corrosion as measured by pipe replacement is indicated by the data, it is apparent that this relation is not quantitative. A close relation between the two factors, however, is not to be expected in view of the fact that the replacement data represents the total replacement on five lines for distances of 1,000 feet; whereas the data on acidity represents the acidity at a single point. Since the soils vary greatly in acidity within a small area, is follows that single determinations of acidity do not indicate necessarily the average acidity within the intervals for which replacements are given. The highly variable nature of certain soils with respect to acidity indicate the importance of securing a sufficient number of soil samples to represent the area in question.

The relation between soil acidity and corrosion brought out in this study may be expected to hold in all regions where the rainfall has been sufficient to remove the natural carbonates of the soil to a depth of several feet. The greater part of the Mississippi Valley would be included in this area.

### Sandy Soils

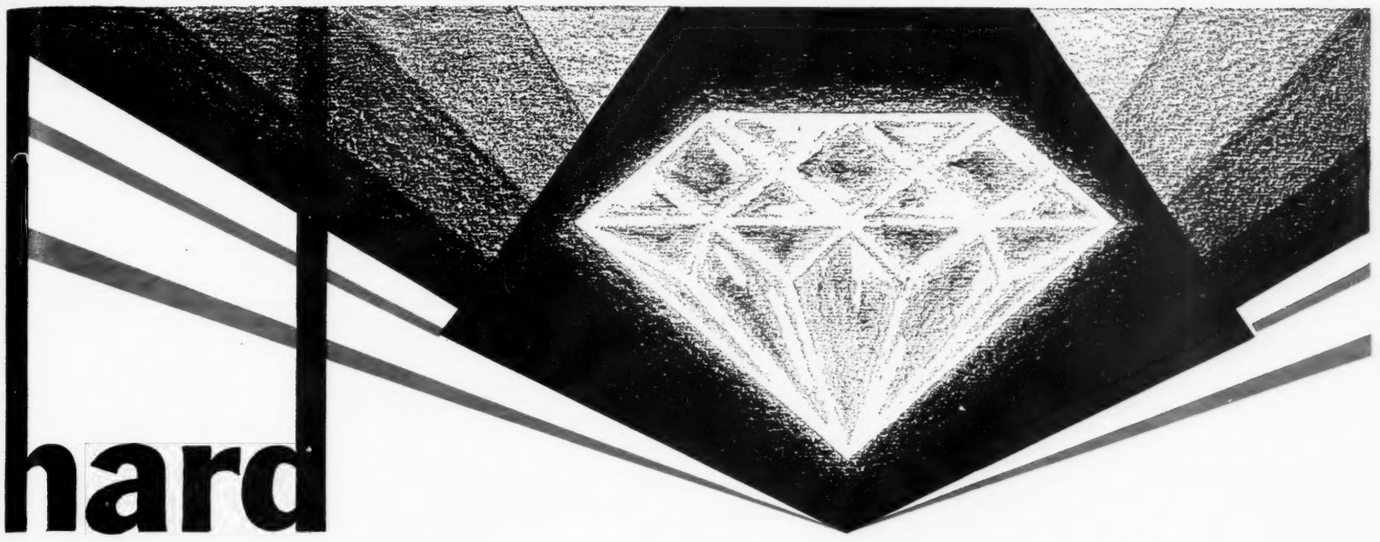
That acidity of the subsoil is not the sole cause of corrosion in these soils, however, is seen by the fact that corrosion has been relatively slight in the sandy soils as a class although their subsoils are in many cases acid. A second factor which seems to have a decided bearing on corrosiveness is the depth at which the calcareous glacial drift occurs in the soil profile. This material is of a peculiarly dense, compact nature, which by reason of its impenetrability to water

(Continued on Page 132)




RELATION OF QUANTITY OF EXCHANGEABLE HYDROGEN AND SOIL SERIES TO QUANTITY OF PIPE REPLACED

*Before American Gas Association Distribution Conference. St. Louis, Mo., April 9.



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# Recommendation for Better Drilling

## Investigation of Crooked Holes Showed Plainly Where Hole Started to Drift and in Some Instances the Cause

By F. F. Hill*

The demand for better drilled wells has become one of the foremost considerations of oil development within the past few years. Some of the causes for this demand may be found in the following:

Difficulty of drilling; frequent fishing jobs; trouble in pumping; excessive wear of tubing and rods, with the consequent loss of time and production by parted rods and leaking tubing. Also the failure in correlation between certain wells, sometimes when very close together on the surface or where drilled between two others of which logs were of record, the unexplainable presence of water in some wells, where neighboring ones, even though supposedly more unfavorably located, continue to produce clean oil in satisfactory quantities; the drilling off of casing or tubing in wells; mudding up of producers; loss of circulation in drilling; circulating fluid coming through some other well in nearby vicinity.

Gradually the operators became awakened to the fact that all was not so well underground as might appear on the surface, and as proof accumulated of the wells wandering, many devices were developed to try and determine the course of the drill hole, and some very interesting and useful instruments have been introduced and used for this purpose. But even though we accept the findings of these instruments, it does not correct the damage that has been done by not having vertical holes. Therefore, it was apparent that better methods must be employed in drilling and means provided to determine when a hole is leaving vertical and a quick and sure way of straightening, which as a rule is not difficult if taken in time and before casing is set; and really now in the best society it is considered poor operating if casing is set in a well that is not reasonably straight.

That more light be shed on this subject and to find some of the contributing causes of crooked hole drilling and that corrective measures be adopted, the Union Oil Co. of California constructed and operates a miniature drilling rig for demonstration purposes, where a study is being made under similar conditions as is found in drilling. (Described in The Oil and Gas Journal, November 14, 1929.) Artificial blocks were made up of different earth materials mixed with cement to produce specimens of different textures, varying degrees of hardness, interbedded with hard shells, boulders, etc. Also these strata of formations might be tilted at any angle to determine the bit action when encountering and drilling through these obstacles.

### Inspecting Crooked Holes

Aside from the experimental rig, the Union Oil Co. of California has gone further by taking certain wells that started drilling in shale or hard formation and became crooked at shallow depths, the fluid was bailed out and lights used to inspect the walls, which showed plainly where the hole started to drift and in some instances the cause, but perhaps the most interesting and instructive feature of this experiment was the opportunity to observe in a dry hole with the human eye the actual performance of the straightening tools while forming new shoulders on the walls, taking off bumps, and otherwise making a good hole out of one that had a poor start in life.

Our investigations led to the conclusion, and we feel that it is generally the opinion of others having made a careful analysis of drilling conditions, that the one greatest contributing factor in bad hole making is the attempt to force drilling beyond reasonable limits by applying too much weight to bit or riding a dull bit with excessive weight. This produces buckling of the drill pipe at the point of least resistance, which is usually just above the most rigid member in the drill stem column, nearest the bottom, which is the drill collar run immediately above the bit. The shorter the drill collar and the smaller the drill stem in relation to the well diameter the more acute the angle of deviation can become.

The starting of coring with a small core barrel in a large hole is a step in the right direction toward a bad hole, as the usual practice in coring is to run with considerable weight and rotate slowly.

### Recommendations Made

Some of the recommendations for better hole making may be found in the following:

1. Do not permit drill pipe to buckle in hole by too much weight. It can produce a bad hole and cause unnecessary fishing.

2. Use only reasonable amount of weight on bit and feed regularly—or uniform pressure on bit.

3. Use long drill collar, the nearest diameter to the size of hole drilled by leaving only such clearance as required for fishing will help keep hole in alignment.

4. Drill the formation clean with as fast rotation as conditions will permit and not try boring as with an auger.

5. Keep up good pump pressure and sufficient volume to wash hole clean of cuttings, have fluid discharge against that portion of the bit that will prevent mudding up of tools, and to wash bottom of hole freely, but not wash against the walls. Keep mud free from sand and larger solids, it saves pumps, drill pipe, supplies, and permits better drilling.

6. Keep bits sharp, use the best wear resisting materials for cutting edges, dress drilling bits and core bits true to gauge so they will rotate concentrically with drill pipe axis, maintaining sufficient clearance above cutting surface of bit to permit bit to work back to vertical if it has been forced off by some minor obstruction. The natural tendency is for drill pipe to hang vertically in the hole and will drill accordingly if not forced out of plumb by some obstruction or by some operation contrary to the law of gravity.

7. Where reducing hole or piloting ahead with small tool, a good precaution is to center the new hole by rotating a diamond point bit for a short way or use a guided pilot bit for starting off.

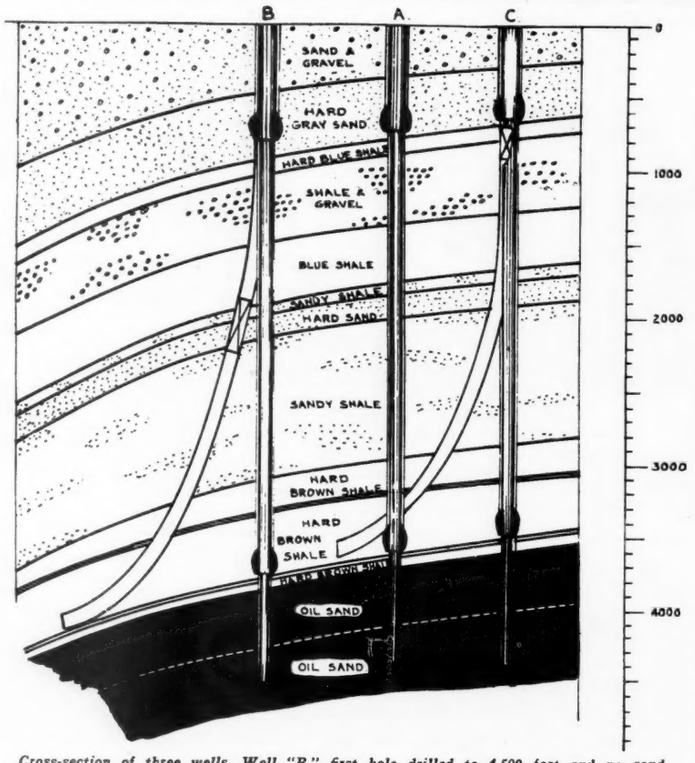
### Educating the Driller

8. Lastly, and of greatest importance, educate the driller to what is expected of him, keep his confidence and get his co-operation, and better results will ensue. Certain geological conditions encountered in drilling will cause deflection of hole, but carlessness or failure to observe simple fundamentals is perhaps the most prevalent cause of crooked holes, and the driller is the one to overcome these conditions so long as he has under his control the hole making equipment. For a good many years past the driller has been fast becoming a part of the mechanism instead of a thinking machine, as the ever increasing call for faster hole has been the means of losing sight of the finer arts of drilling and has become a battle of speed, manufacturing, engineering, selling, etc., rather than workmanship and results following completion of well.

I do not mean that we should turn the clock backwards and not feel that we have made progress in drilling, for we surely have, and gone ahead by leaps and bounds, especially in making hole and a lot of it crooked.

The operator is mostly to blame for this as the drilling in town lot areas has brought about a competitive condition where top speed is required and equipment is demanded by the operator to meet these conditions. The manufacturer has not only tried to meet these demands, but has tried to forge ahead by designing heavier and better equipment, and as a selling argument for his goods, he promises faster hole making.

Great strides have been made during the past year and personally, I believe crooked holes are going to be a thing of the past in a remarkably short time, as there are enough instruments available now and enough knowledge of drilling technique to overcome this difficulty, and there is no reason to doubt that another year will see as great additional improvement in drilling as we have witnessed in the past one.




*Cross-section of three wells. Well "B," first hole drilled to 4,500 feet and no sand. Ended with strata vertical—1,605 feet off. Second hole got sand at 3,893 feet. Depth 4,526 feet. Well "C," first hole drilled to 4,200 feet was 1,200 feet off. Ended with vertical strata. No sand. Second hole got sand at 3,870 feet. Well "A" was straight hole.*

*Before A.P.I. at Petroleum Equipment & Engineering Exposition at Los Angeles, Calif. Courtesy Union Oil Co. of California.

# INGENIOUS DEVICE PREVENTS MUCH OF THE TROUBLE IN PIPE LAYOUTS

By Raleigh Hales

Welded construction has been more or less extensively employed for several years in all phases of petroleum piping layouts, but it is undoubtedly destined to play a far greater part in the future, as its many advantages become more fully appreciated.

Prior to the advent of Tube-turns, there was no standard fitting for welded piping. In order to obtain, for example, a smooth, short-radius 90-degree change in direction, it was necessary to make a miter-welded turn consisting of three or more joints, entailing the overhead expense of making templates and cutting pipe into very short lengths and odd angles.

Tube-turns save much valuable time and labor required for this operation by providing a practically 100 per cent true turn ready for immediate use, thereby facilitating and expediting construction, minimizing friction, and presenting a trim, pleasing appearance.

The oil industry, always a pioneer and willing to give new methods a fair test, was quick to recognize the many advantageous features of Tube-turns. Engineers have long desired just what this interesting product provides, a seamless, short-radius fitting with no buckling or thinning of the walls and no flattening of the cross-section for use in welded piping.

Some of the most important applications of Tube-turns in the petroleum industry are briefly described. It is impossible to cover the field completely here, but one application naturally suggests others and engineers are rapidly finding more and more places where Tube-turns can be used to give a better job, save time and save money.

The modern oil refinery offers almost

(Continued on Page 129)

## DEVICE PREVENTS MUCH PIPE LAYOUT TROUBLE

(Continued from Page 126)

unlimited opportunities for using Tube-turns to good advantage. A multiplicity of piping must of necessity be crowded into a comparatively limited space, every inch of which is usually in great demand and consequently at a premium.

In any system of piping the fundamental object is to conduct the fluid in the safest and most economical manner. Tube-turns are important factors in the attainment of safety and economy by providing seamless, nonporous fittings which are uniformly strong at all points and present the absolute minimum of resistance to flow.

The pressure drop through batteries of residuum to crude, gas-oil to crude and other exchangers can be lowered enormously by Tube-turns. Decrease in friction, when computed over a reasonable length of time, would represent a substantial saving in pumping costs.

When Tube-turns are used leakage and corrosion at joints and danger of breakage at these points due to line strains are eliminated. Friction is also materially lowered.

Tube-turns are ideally suited for use in the large vapor lines from the top of fractionating towers to partial condensers, vapor to crude exchangers, and final condensers. Perfectly smooth changes in direction, so highly desirable and essential in this large piping, are made possible.

### For Cooling Towers

Water discharge lines at the top of atmospheric cooling towers offer another application where Tube-turns can be used to give smooth flow with resultant low friction in the system. Tops of these towers are usually between 35 and 50 feet high and any saving at all in pressure loss at such heights is important and well worth while obtaining.

Retorts, or tube stills, are perhaps the only kind of equipment in which Tube-turns are used in the construction of an individual piece of apparatus. They form the return bends at the ends of the tubes, and due to their uniform wall thickness throughout the entire turn, offer the least resistance to flow. This is especially valuable in such a restricted space.

It is always desirable to have as low a head as possible in the suction to centrifugal pumps. This suction head can be appreciably lowered by using Tube-turns in the line and especially at the point where the line makes its final turn before entering the suction opening in the pump. In fact, Tube-turns can be advantageously employed in both the suction and discharge piping to all pumps.

### The Natural Gasoline Plant

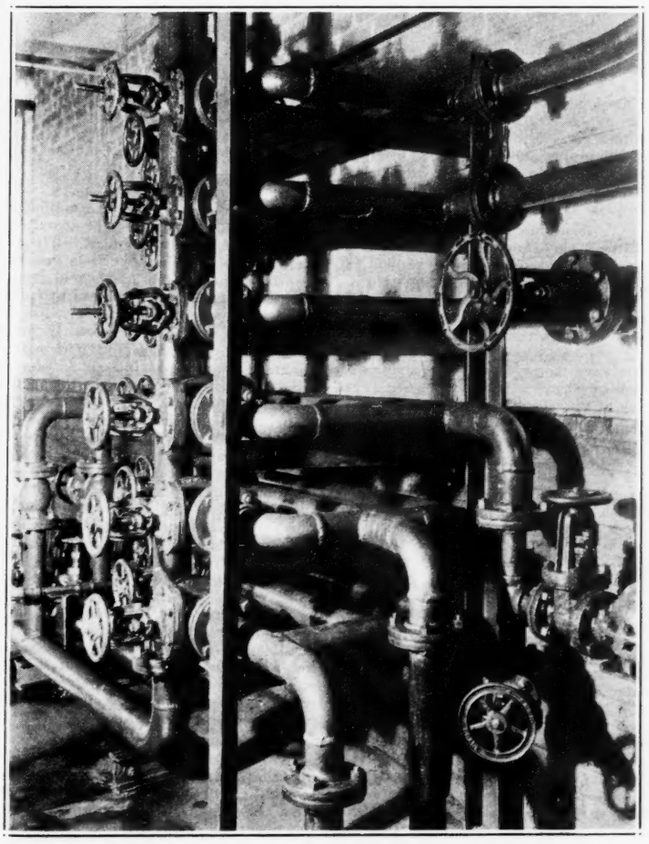
All the foregoing refinery applications, modified slightly in some cases to meet different conditions, are found in the modern natural gasoline absorption plant. There are a number of places in these plants, however, where Tube-turns can be advantageously used, but which are not common to a refinery unless the latter contains a vapor recovery plant.

Interconnecting piping between heat exchangers, still, rectifiers, oil coolers, gas coolers, condensers, and absorbers is designed to have the shortest possible path, within practical limits, from one unit to another. This is also true of piping at the boilers and in the compressor house. Tube-turns will enable a maximum of pipe surface to be obtained in a minimum of space, with short, smooth turns, of uniform cross-section that reduce friction, eliminate leakage and corrosion at joints, and are economically insulated.

Tube-turns are being used extensively in the compressor units of gas companies and absorption plants. Here they can be advantageously inserted in the suction and discharge lines to the compressors, thereby eliminating leakage and corrosion and reducing friction. In the discharge and recirculating lines outside the compressor house they are handy for making welded cross-sections and by-passes in the small size piping.

### Pipe Lines

Tube-turns can be applied to good advantage where smooth, short turns are desired or necessary in any pipe line and wherever drip connections are made in a gas line. Especially in the miscel-



*Tube-turns in manifold to fresh feed pumps in eastern refinery.*

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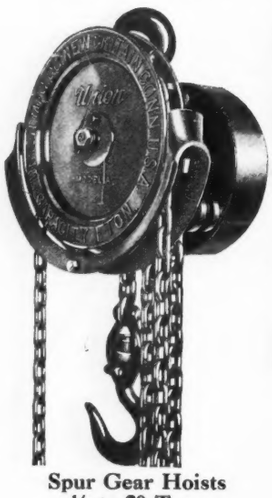

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laneous piping of pipe line pumping stations can Tube-turns be used to excellent advantage. They greatly simplify the problem of manifolding at these stations by providing a short radius elbow or turn of any desired angle ready to be quickly welded into the line at any point.

Friction is a very important item to be considered in pumping all oils, but especially those of high viscosity, and every effort is made to reduce it to the absolute minimum. Tube-turns are particularly valuable here in that they provide perfectly smooth changes in direction, with no flattening or buckling of the walls. This prevents eddying of the fluid at turns, thereby greatly reducing turbulence and pressure drop.

There are several places where the production department can use Tube-turns to economical advantage.

In the lines carrying gas and oil from the wells to gas and oil separators, dehydrators and points where responsibility is taken over by another department, they can be conveniently applied to save time in welded piping. The labor and expense of mitering are eliminated. Only two welds straight across the pipe and a Tube-turn cut to any desired angle are necessary to make a perfectly smooth turn and joint. No time is wasted in making templates.

## REMOTE CONTROL IN PLANT OPERATION

(Continued from Page 124)

distortion and their action can not only be used to transmit indications but also to transmit power necessary to effect control.

The motors, known as Selsyn motors, are a product of the General Electric Co. and have been heretofore extensively used in connection with fire control on battleships. Diagram and Figure 1 shows the connections for the electric circuit which connects the transmitting and receiving motor. These motors are entirely encased and are further gas-proofed by suitable covers. The rotating shaft is mounted on ball-bearings and can be used in any position. The motors are made in three sizes, depending on the power required and whether the units are required for transmission of power or indicating mechanism.

It will be evident that the application of such a principle to refining equipment is a wide one and that the use of such mechanism not only permits greater ease in control from a central station but permits a great deal more latitude in the design of piping and equipment since the control of certain important valves can be effected without respect to their position in the system.

### Describes Mechanism

Figure 1 also shows arrangement of a transmitting and receiving mechanism as applied to a valve. This mechanism is illustrated in the accompanying photographs. The transmitting mechanism consists of a wheel through which the control is effected, which in turn rotates the transmitting motor through a gearing. A point of mechanism is connected with the motion of the wheel to denote the amount the system is turned and a pilot light is incorporated in the unit to indicate when the circuits are energized. The rotating of the transmitting motor causes the rotation of the receiving motor, the motion of which is transmitted through a gearing to a shaft and thence to a worm gear which is connected to a wheel on the valve stem.

The worm gear mechanism is connected to the valve wheel by means of a clutch, half of which is clamped permanently to the spokes of the wheel, the other half being directly connected with the worm mechanism. A quick detachable clutch is inserted between the wheel and the worm case so that the machanism can be disconnected quickly and at will. It will be noted that the drive shaft from the receiving motor is flexible and that the mechanism can thus be applied to a wheel which is solidly mounted on the valve stem and which will rise and fall as the setting is changed. In addition to this, the worm gear is hollow and in the event that the mechanism is applied to a rising stem valve the stem can pass freely through the center of the worm.

The transmitting unit is made up in small panels roughly 30"x16" and can be bolted through control panels or assembled in batteries.

The receiving mechanism can be applied to any type of valve or to effect any rotary motion desired. The power transmitted to the receiving mechanism is only that which is impressed on the transmitting wheel. Thus the resistance to motion can be gauged and the actual amount of correction observed on the wheel in the same manner as it would be observed in turning the valve itself. There is, of course, some loss in friction which is comparatively small and ample power is provided to start the valve from full closed jammed position when necessary.

### Type of Motors

The motors themselves, which can be likened to rotary solenoids, have of course a limited amount of torque which they can transmit without having the phase broken down. This torque can be amplified, however, by merely gearing up the transmitting motor and gearing down the receiving motor. Thus the power is transmitted at low torque and high speed and the extent to which the motors are out of phase becomes relatively unimportant since this amount, which may aggregate to 5° or 10°, is reduced in proportion to the gear ratio. Thus, with a gearing of 100 to 1 on the transmitter and receiver, the valve wheel would move the same number of turns as the transmitting wheel, one turn of the transmitting wheel would cause 100 turns of the transmitting motor and correspondingly 100 turns of the receiving motor, the receiving motor also being geared down 100 to 1 would cause one turn on the valve wheel. Furthermore, the extent to which the motors were out of phase during this process would be 100 times greater than the extent to which the transmitting wheel and valve wheel would be out of phase.

If we assume 10° change in phase of the motor shafts, the transmitting and valve wheel would be only one-tenth degree out of phase, which for all practicable purposes is negligible. The mechanisms are made usually to transmit from 150 to 200 foot pounds, which appears to be ample to turn any valve mechanism. They can also be made to operate in any ratio desired to obtain close control, thus it would be possible to have, by changing the gear ratio, four turns of the transmitting wheel to one turn of the valve in the event a close regulation is desired and a heavy valve is to be turned.

### Application

It will be evident that the application of remote control of this type to refinery equipment is almost unlimited. It is most usefully applied where controls are comparatively inaccessible and would require mechanical facilities for access and additional labor to operate without. For instance, one installation recently made comprises a distillation unit with a fractionating tower approximately 150 feet in height. This tower, which delivers a number of side streams, is controlled by changing the position of weirs at various levels in the tower. It would be evidently impractical to have operators ascend the tower to make adjustment and it seems probable that if this were required, without making adequate provision for the circumstances, the operation might well suffer from lack of attention. The installation on these units provides for a receiving motor which has a control point on the tower, and a transmitting mechanism located in the receiving house in proximity to the look boxes. Thus it is possible for the house man to trim the tower and change the quality of the side streams directly from the receiving house, which insures closer attention and less labor to operate the unit.

### Cracking Installations

Again, in other installations for cracking, the control system has been applied to relief valves reducing the pressure from the reaction chamber into the bubble tower or from the bubble tower to the condenser and having this pressure

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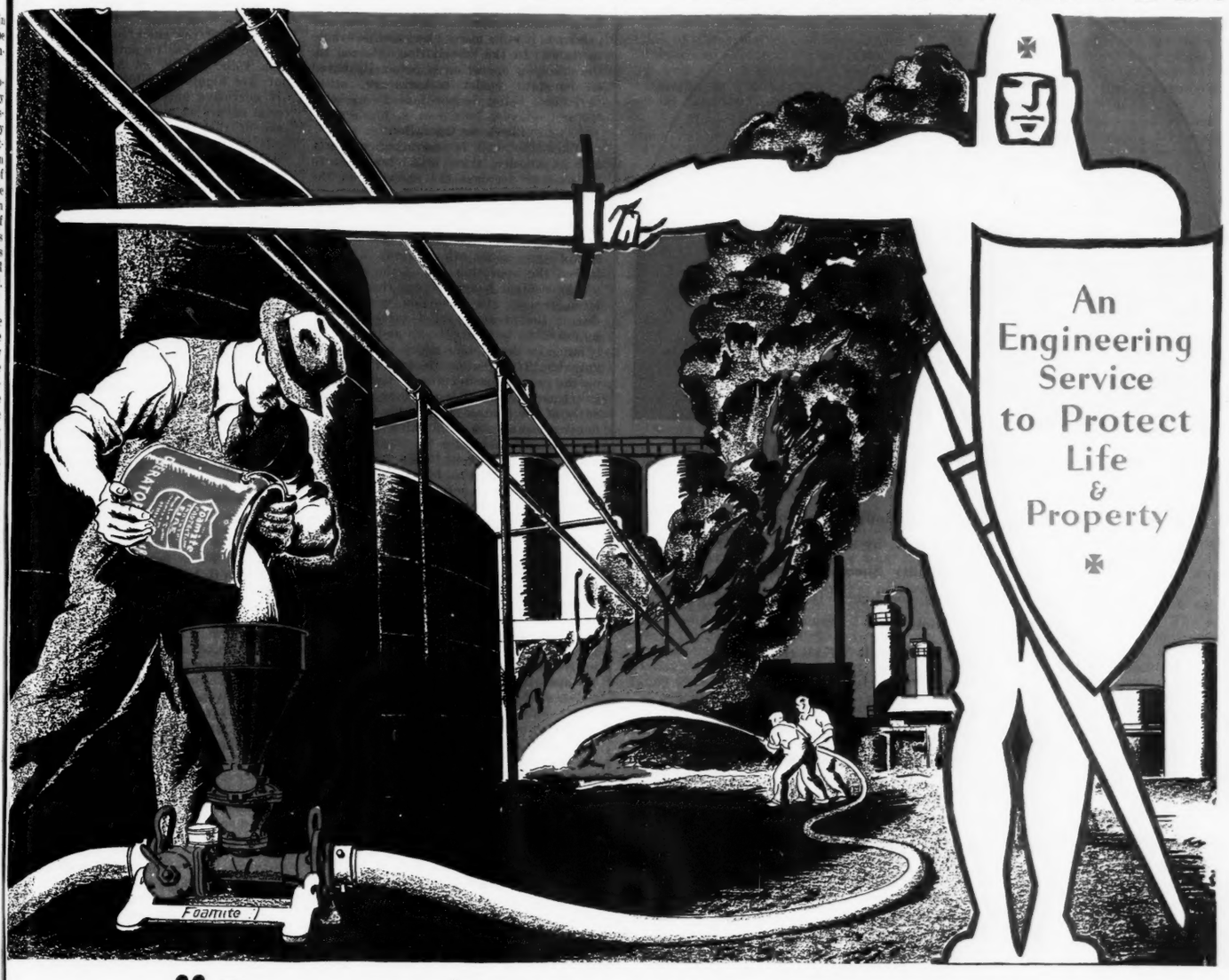


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release controlled by the operator on the board.

It is interesting to note in this connection that although automatic devices have been developed to maintain constant pressure, it is in many cases not desirable to do so. In the installation referred to, the cracking operation is primarily based on constant outlet temperature, other variables being subordinated to this factor.

**Check on Operation**

When the still is operating properly and in balance, there is no tendency to increase or decrease the pressure on the system, therefore a setting of the pressure relief valve should under normal conditions be constant. If the pressure in the system rises, it is usually an indication that some other factor has disturbed the operation and if the operator at the control board notices this he will often remedy the condition without resetting the pressure relief valve. In this manner the pressure is an indication of balance in the system which is extremely valuable. If an automatic device is placed on the pressure relief line or the pressure is released by another operator independently of the control board, this indication never appears, since the valve will simply be reset with changes in pressure. The result of operating in this manner would be that the still can become unbalanced and continue to operate under this condition for some time before it is noticed by other indications and then a longer period of readjustment is required to correct the situation.

In other words, when the pressure relief is controlled by the same operator who controls other portions of the apparatus he has an opportunity to judge whether the pressure valve must be reset or whether other conditions must be corrected. To remove this option makes the operation less efficient. From the point of view of design, the remote control enables considerable saving in piping and in many cases removes the necessity of platforms and structural work to operate certain valves. It furthermore gives greater liberty in the design of the units as it does not force the position of the control panel in any particular locality but enables it to be placed where it is in the least danger from fire hazard and away from dust and dirt caused by cleaning.

The mechanism is safeguarded by the fact that the motors do not rotate when energized by the current and respond only to hand motion. In the event the current fails, the valve would remain in whatever setting it happens to be placed. There is no danger of overloading or of breakage since the power transmitted is merely that applied to the transmitting wheel. Any resistance or reaction on the receiving end is, of course, felt on the transmitter so that if the valve were jammed or its stuffing box too tight this resistance would be felt in transmitting the motion. In other words the man operating the remote control can actually feel what he is doing and obtain an immediate and natural reaction to any adjustment he makes. The advantages of this feature in refinery work are obvious.

The mechanisms were originally constructed to take care of special conditions in the design of cracking units, but in view of their success and the apparent general usefulness in refinery work, provision has been made to commercialize the device. These will be available on the market in the near future and supplied by the Brown Instrument Co. of Philadelphia to suit a great variety of applications found in refinery design.

## SOIL CHARACTERISTICS AND PIPE CORROSION

(Continued from Page 122)

restricts drainage, thereby inducing corrosion. It also seems likely that pipes lying in immediate contact with highly acid soil material and alkaline glacial material may be corroded by galvanic action. In the case of the corrosive Nappanee soil the calcareous glacial material occurs at pipe depth, from 18 to 30 inches. On the other hand, in the case of the noncorrosive Brookston soils the glacial material occurs below 36 inches, and therefore can have but little effect in corrosion. It is of particular significance in connection with the probable influence of the calcareous glacial material on corrosion to note that the Wauseon soils, which, as has been pointed out, are highly variable in corrosiveness, are corrosive only when the glacial material occurs at pipe depth. Thus, in the case of the Wauseon and Wauseon-like soils identified at stake numbers 13,300, 15,700, 25,100 and 37,200, the glacial material occurred at 30 inches or above. At these locations where the pipes are in contact with the material, the soils are corrosive. On the other hand, in the noncorrosive areas of the Wauseon, at stake numbers 95,577 and 160,000, the glacial material was found to occur below 36 inches.

**Discussion**

The results of this investigation show the importance of determining the corrosiveness of soils prior to the laying of a pipe line and the application of protective coatings. In conducting such a survey, however, it is important that the soil types occurring along the prospective line be identified and their boundaries established. Since abrupt changes in type may occur within a short distance in a region of complex distribution of soils, it is obvious that collection of soil samples for corrosion study at arbitrary distances may give misleading results. Soil identification in any region calls for specialized knowledge of the soils of that region. This is particularly true of localities in which changes in topographic features, which indicate change in soil type, are too slight to be observed by anyone unfamiliar with the soils in question.

## DEMONSTRATING DIESELS

Paul Arbon & Co., appointed dealers for the Atlas Imperial Diesel Engine Co. for the Mid-Continent territory, are demonstrating various sizes of Diesel engines at their plant at Rockford Avenue and Frisco tracks in Tulsa. They are carrying in stock engines from 20 horsepower to 500 horsepower for all oil field requirements. Their first Diesel engine was shipped out 10 miles west of Stillwater, Okla. to Sparkman-Reusch Drilling Co. last week for water pumping purposes. They are demonstrating engines for rotary drilling, cable-tool drilling, oil well pumping, compressor units, pipe line pumping and other uses.

## READY FOR GAS SHORT COURSE

Programs have been sent out for the Southwestern Gas Measurement Short Course, conducted by the College of Engineering, University of Oklahoma, to be held at Norman, April 15, 16 and 17. The Oklahoma Corporation Commission, Oklahoma Utilities Association, Natural Gas Department of the American Gas Association, and the Natural Gasoline Association of America also co-operate in arranging for and conducting this school. D. A. Sillers, of Dallas, Tex., Lone Star Gas Co., is chairman of the general committee, and W. H. Carson, University of Oklahoma, is director of the short course. Instructors at the university, with the assistance of gas company experts and representatives of gas equipment manufacturers, furnish the instruction and demonstrations. Attendance is expected to equal or exceed that of last year, which was approximately 400.

## TEXAS UNIVERSITY ROYALTY

AUSTIN, Tex., Apr. 5.—During March total payments of oil royalties to the University of Texas, from production upon its lands in February, was $142,142, compared with $178,212 for the preceding month. To the March income from this source was added $173,775, derived from bonuses paid for oil and gas leases of university lands in Ector County, making a grand total of $315,917 for the month. The total sum received by the university in royalties and bonuses is $14,053,863, all of which is invested in Liberty bonds.

## PREPARATION FOR TESTS OF PIPE LINE COATINGS

(Continued from Page 86)

desired, Kraft paper can also be wrapped on the pipe in the same operation with this machine. It was used on the P coating but not on the X.

Coatings T, U and Z were applied with the Hill-Hubbell machine. In this machine the pipe lengths are coupled together with special couplings and supported on "dollies." These travel on a track so that a continuous stream of pipe passes spirally through the machine. The primed pipe is bathed in molten bituminous substance which flows from an overhead tank onto a sling held under the pipe. A pump keeps the overhead tank full of hot bituminous substance. Another stream flows over the felt as it is wound on the pipe, and a third stream flows onto a second sling which coats the felt-wrapped pipe. Kraft paper is then wrapped on the pipe. Ordinarily this is all done in one operation, but due to the flexibility of the 2-inch pipe, which size is seldom coated by this method, better results were obtained by coating the pipe for the test in two operations. However, only one operation was needed for coating U as the Kraft paper was wrapped on top of the felt without a second slinging operation.

Coatings CC, J, JJ and WF were applied with a lathe type machine in the galvanizing plant of the National Tube Co. The pipe rotates in a lathe as a carriage moves along the pipe. The rolls of felt are mounted on the carriage. A pump could have been attached to the carriage to pump the hot bituminous substance on the felt as it was wrapped on the pipe, but the cost of cleaning the machine would have been greater than that of pouring the bituminous substance on the felt by hand. For this reason the latter method was used with the coatings that were prepared for these tests. The pipes for the CC coating were preheated and brushed with hot asphalt and then wrapped. Those for the WF coating were primed and coated with bitumastic enamel by means of a sling before they were wrapped, those for the J and JJ coatings were primed, wrapped and then coated with the bituminous substance with a sling.

### Electrical Resistance

Without exception all of the felt reinforced coatings showed an electrical resistance greater than 1 megohm. The time required to apply most of these coatings was considerably greater than it would be in actual practice because it was not economical or even possible to get the equipment in good working order when only 120 feet of pipe were coated. Nevertheless the time required indicates that all of these coatings are practical and that their costs of application are not prohibitive.

e. The cotton fabric reinforced coatings are divided into hand-applied and machine-applied coatings. The hand-applied coatings include D, DD, MM. V, VX, VV and Y. The machine-applied coatings include LL, N, NL, NS and Q. For all of the hand-applied cotton fabrics except MM the pipe was rotated and the roll of fabric held at the proper angle so that it wrapped on the pipe. For the MM coating the roll was passed around the stationary pipe. The coatings V, VV, VX and Y were applied by gas companies at their coating plants. The preheated pipe was placed on rolls over a trough of molten asphalt. Asphalt was poured over the pipe and the cotton fabric was wrapped on while the pipe was hot. Another layer of asphalt was then poured over the fabric.

In all the machine-applied cotton fabric reinforced coatings, the lathe type wrapping machine, which was described under felt reinforced coatings was used. The LL and Q coatings were applied cold while for all the others the cotton fabric passed through molten asphalt before it went on the pipe.

None of the hand-applied coatings in this class were covered with paper, the fabric in all cases being coated with the coating material. All of the machine-applied coatings in this group except Q and NS were covered with an outer fabric of paper. Q had no outer fabric on it and NS was wrapped with 30-gauge sheet steel.

None of the gas company coatings was tested for electrical resistance and the NS coating could not be tested because the steel shell was in contact with the pipe at the ends of the specimens. All of the remainder of the coatings in this group except Q showed a resistance greater than 1 megohm. The Q coating material is not a conductor but there were numerous pinholes in it.

f. Miscellaneous coatings which do not fall into the above classes are A, C, WL, WW and NT. All of these coatings were applied hot. They were all applied with a sling except C and NT. In applying coating C the full length, preheated pipe was dipped in the molten coating material which has an asphalt base. Coating NT is an asphalt mastic containing a high percentage of mineral filler. This was extruded on pipe that was previously dipped in low melting point asphalt. At the present time this is strictly an experimental coating. Coating A does not contain a filler and has a coal tar base. WL and WW are both bitumastic enamel, the first being applied to pipe that was painted with red lead and the second being covered with a shell of wood veneer .05-inch thick. All of these coatings had an electrical resistance greater than 1 megohm when the specimens were prepared.

### Preparation of Specimens

After the full length pipe was coated, it was cut in 2-foot lengths by means of a treading machine and a three-wheel pipe cutter. Each specimen was then marked in four places with the letter designating the coating and a number. Sixty specimens of each coating were made and they were numbered from 1 to 60. Tin cans were sealed on the ends of the specimens with whatever sealing material the manufacturer thought best, and they were sealed so that the pipe was not in contact with the can. The cans serve several purposes: They cover up the ends of the specimens so that moisture cannot creep under the coating, and the coating is exposed in the same way it would be exposed on an actual line. They prevent the soil and water from entering the pipe and corroding it on the inside. They support the pipe in the trench so that it does not rest on the bottom of the trench, which is the way an actual pipe line lies over the greater part of its length. They take all the wear and tear of shipment, for the coated pipe cannot touch anything while it is in the shipping box. They make it possible to determine the approximate resistance of the coating.

After one can was sealed on one end the specimens were tested for electrical resistance. If there was conduction due to pin holes caused by faulty application, the holes were repaired. If the holes were so numerous that they appeared to be characteristic of the coating, no attempt was made to repair them. The method of making this test for electrical resistance consists of dipping the specimen in an iron tank full of water so that the specimen was almost completely immersed. One terminal of a dry cell is connected to the metallic container; the other was connected to the pipe through a 1,000-ohm resistance and a milliammeter having a full scale deflection of 1 milliampere. The deflection of the milliammeter for each specimen was recorded. The 1,000-ohm resistance is for the purpose of protecting the instrument in case the coating has a very low resistance. After the other can was placed on the specimens they were packed in boxes and shipped to the places of burial.

### Burial of the Specimens

Table 2 gives the scheme of burial of the specimens. All of them have been buried except the ones in Los Angeles and Kansas City. As can be seen from Table 2, four specimens of each coating are buried in each location. The specimens are laid crosswise in the bottom of the trench, with 9 inches between the centers of adjacent specimens. In each location the specimens are divided into four groups, each group containing one specimen of each coating. Each group was laid in a trench in the same order that the coatings are arranged in Table 1. A bare specimen was buried at each end of each group. The specimens will be removed at four separate times, one group being removed from each location

TABLE 1.—PIPE COATINGS IN AMERICAN GAS ASSOCIATION TESTS

| Symbol | Manufacturer or Agent | Method of Applying Primer | Trade Name of Primer | Method of Applying Coating | Trade Name of Coating | Fabric Reinforcement if any | Man hrs. to apply coatg. | Av. Temp. of Appln. | Av. Thickness in. |
|---|---|---|---|---|---|---|---|---|---|
| A | American Tar Products Co. | Brush | A.T.P. Primer | Sling | A.T.P.Pipe Coatg.#1 | -- | 2.8 | 380 | .070 |
| B | Barrett Co. | " | B.P.L. Primer | " | B.P.L. Enamel | -- | 4.0 | 350 | .038 |
| BB | " " | " | B.P.L. Primer | Hand | Pitch & Felt | *15 lb.rag felt | 4.5 | 370 | .134 |
| C | Benjamin Foster Co. | Dipped no other treatment | | | I.B.M.Pipe Coating | -- | 3.0 | -- | .014 |
| CC | " " " | Brush-hot | I.B.M. No.1 | Machine | I.B.M. No.2 | 15 lb. asbestos | 7.5 | 375 | .120 |
| D | Dearborn Chemical Co. | Brush | NoOxid A special | Hand | No-Ox-Id G | No-Ox-Id muslin | 7.3 | cold | .054 |
| DD | " " " | " | " G | " | " Gx+G | " " | 10.5 | 280 | .071 |
| E | Emulsion Process | " | E.P. No. 1 | Brush | Parafalt | -- | 4.0 | cold | .047 |
| EE | Consolidated Gas Co. of N. Y. | Dipped and dusted with cement | | | Armored Hydrait | -- | 1.8 | " | .0605 |
| F | Flintkote Co. | Dipped vertically, no other treatment | | | A.C.E. | -- | *4.0 | " | .082 |
| FF | " " | Brush | A.C.E.+cement | Brush | A.C.E.+cement | -- | 4.0 | " | .029 |
| G | Headley Good Roads Co. | " | Headley No.11 | " | Headley No. 11 | -- | 3.75 | " | .016 |
| H | Hill, Hubbell & Co. | " | Inhibourine | Sling | Biturine | -- | 2.0 | 470 | .031 |
| J | Johns-Manville Corp. | " | J.M.Tar Primer | Machine | J.M.Pitch No.2 | 14 lb.,asbestos | 6.7 | 350 | .163 |
| JJ | " " " | " | J.M.Asphalt " | " | J.M.Asphalt | 14 lb. asbestos | 7.5 | 475 | .120 |
| K | Arco Company | " | Arco Ravenite | Brush | Save-a-line | -- | 3.5 | cold | .009 |
| L | Barber Asphalt Co. | " | Plastic Pipe Ctg. | " | P.P.C. | -- | 2.7 | " | .024 |
| LL | " " " | " | Genasco Primer | Machine | -- | *Sat.cotton sheetg. | 5.8 | " | .056 |
| M | McEverlast, Inc. | " | Penetration | Brush | Electrolysis Proof | -- | 4.3 | " | .010 |
| MM | " " | " | Penetration | Sling & hand wrap | M.P.C. | Genasburg | 5.5 | 325 | .080 |
| N | National Tube Co. | Dipped | Robertson #228 | Machine | National Coating | *Muslin | 6.0 | 380 | .146 |
| NL | Lead Industries Assn. | Brush | Red lead | " | " " | " " | 6.25 | 360 | .117 |
| NS | National Tube Co. | Dipped | Robertson #228 | " | " " | Muslin and steel | 6.0 | 382 | .147 |
| NT | " " " | " | " " | Extruded | Robertson #230 | -- | -- | 340 | .131 |
| P | Paraffine Companies, Inc. | Brush | Pabco #440 | Pabco Mach. | Floatine | *Pabco Felt | 2.2 | 350 | .123 |
| Q | Albrecht Pagenstecher | Wrapped, no other treatment | | Machine | Schades Wrapper | Schades wrapper | 6.0 | cold | .051 |
| R | Resistoor Engineering Corp. | Brush | Resist.Primer | Sling | Resistoor Enamel | -- | 2.0 | 400 | .061 |
| S | Sherwin-Williams Co. | " | Lyne-Kote Primer | " | Lyne-Kote Hot | -- | 2.0 | 420 | .034 |
| SS | " " " | " | Lyne-Kote Primer | Brush | Lyne-Kote Cold | -- | 3.0 | cold | .007 |
| T | Texas Co. | " | Texaco Primer | Machine | Asphalt | *15 lb.rag felt | 8.3 | 450 | .150 |
| U | Hill, Hubbell & Co. | " | Inhibourine | " | Biturine Spec. A-1 | *30 lb rag felt | 3.6 | 425 | .214 |
| V | Iroquois Gas Corp. | " | Robertson #274 | Hand | Robertson Asphalt | Cheesecloth | 2.6 | 420 | .070 |
| VV | " " " | " | " #274 | " | Std.N.J.Brick Filler | " | 3.0 | 410 | .038 |
| VX | " " " | " | Inertol | " | Std. of N.J. " " | " | 3.0 | 440 | .041 |
| W | Wailes, Dove-Hermiston Corp. | " | Bitumastic Sol. | Sling | Bitumastic Special | -- | 3.5 | 456 | .058 |
| WF | " " " | " | " | Machine | Bitumastic | 15 lb.asbestos | 6.7 | 425 | .154 |
| WL | Lead Industries Assn. | " | Red Lead | Sling | " | -- | 3.2 | 450 | .052 |
| WN | Wailes, Dove-Hermiston Corp. | " | Bitumastic Sol. | " | " | -- | 3.5 | 420 | .050* |
| WW | " " " | " | " | " | " | Wood veneer | 3.3 | 420 | .100 |
| X | Milwaukee Gas Light Co. | " | Pabco Primer | Pabco Mach. | Floatine | Pabco rag felt | 2.0 | 400 | .123 |
| Y | East Ohio Gas Co. | No Primer | -- | Hand | -- | Cotton Sheating | 1.7 | 372 | .115 |
| Z | Hill, Hubbell & Co. | Brush | Inhibourine | Machine | Biturine Spec.AX1 | 15 lb.asbestos | 6.3 | 430 | .119 |

* Final application of Kraft paper.

at a time. It is planned to remove the first groups next September.

**Descriptions of Soils and Burial Places**

a. Cinders. — Some distribution men feel that cinders are the cause of all of the corrosion of their mains, and almost everyone believes that cinders are a source of considerable trouble. The composition of cinders probably varies over a wide range and their corrosiveness probably also varies widely. The sharp angular fragments will probably press holes in the softer coatings. The location at Pittsburgh is an old bed of cinders that is high and well drained. At Milwaukee the trench is near a canal, in which the level of the water is usually at about the level of the specimens. In this place the cinders are fresh.

b. Tidal Marsh.—About 2,500 square miles of tidal marsh have been mapped along the Atlantic and Gulf Coasts. As the name implies, the surface of the marshes is practically flat and is covered with ocean water at high tides. The soil material varies from dark, oozy sediments interspersed with coarse marsh grass roots to a yellowish or dark colored clay which rests at 2 to 4 feet upon still darker colored clay. The subsoil and free water of the oil are charged with hydrogen sulphide. The vegetation consists mostly of salt grass. Most of the dipped coatings which were removed from tidal marsh by the Bureau of Standards in 1926 after a burial of about two years were in a rather bad condition. The original bureau burial place in tidal marsh is near an oil refinery and much of the waste from the refinery flows in a near-by tidal stream. For this reason this location may not be typical of average conditions in this soil and so new locations were chosen at Atlantic City and Brockton, Mass.

c. Muck.—Areas of muck are found distributed over the entire United States, especially along sluggish streams and in low, swampy places where the remains of growing plants have been partially preserved under water. These areas are small and widely scattered. Areas of peat or muck or both have been mapped in 28 states. Muck is a soil containing between 25 and 65 per cent of organic matter. The bare and coated pipes that have been removed by the -Bureau of Standards from muck in New Orleans show that it is a very destructive soil. The New Orleans soil contains considerable filled material and is not typical of average conditions in this type, so new locations were chosen in West Palm Beach and Miami. These cities are adjacent to the Everglades, which is the largest body of organic soil types in the United States.

**Old Well Weathered Soil**

d. Cecil Series.—These soils are most prevalent in the southern Piedmont, where they are the most important soils. This series occupies about one-third of the entire Piedmont plateau, having an area of about 25,000 square miles. The soils of the Cecil series have grayish brown surface soils in the sandy types to reddish brown and even red surface soils in the heavier types, and a red, stiff but brittle clay subsoil. The parent rock, which is of igneous origin, is predominantly granite or gneiss, is found at depths ranging from 3 feet to perhaps as great as 30 feet. Rock fragments are often found in the soil. Quartz sand is nearly always present in the subsoil and is often on the surface, especially in the sandy types. This soil is not as destructive to pipe or coatings as either muck or tidal marsh but it ranks eighth among the 47 burial locations in pitting rate. One set of specimens is buried at the original Bureau of Standards location at Atlanta and the other set is in a new location at Raleigh. This soil was chosen because it has a large area and it is one of the best examples of an old well-weathered soil.

e. Susquehanna Clay. — The soils of the Susquehanna series are developed most extensively in the higher portions of the Coastal plain from the vicinity of Chesapeake Bay to Central Texas. The area of this series is approximately 12,000 square miles in the State of Maryland, Virginia, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Louisiana, Texas, Oklahoma and Arkansas. The fine sandy loam and the clay are the principal types. These are grayish (in the sandy types) to red (in the clay), with stiff, plastic, red heavy clay subsoils, which become mottled in the lower part with gray or bluish gray, red and yellow. Often the mottling begins just beneath the soil. This layer extends to from 60 to 72 inches; the mottling is usually red in the upper and light gray in the lower part. Below this is the parent material which consists of alternating layers of light gray or bluish gray clay and brownish yellow fine sandy material. The surface of these stiff lands is characteristically rolling to hilly but the topography is usually more subdued west of the Mississippi. One set of specimens is buried in this soil at Shreveport, La., near some bare specimens that were buried by the Bureau of Standards in 1928.

**TABLE 2—BURIAL SCHEME OF AMERICAN GAS ASSOCIATION PIPE COATINGS**

| Specimen Nos. | Soil | City | Co-operating utility |
|---|---|---|---|
| 1- 4 | Cinders | Pittsburgh, Pa. | Equitable Gas Co. |
| 5- 8 | Cinders | Milwaukee, Wis. | Milwaukee Gas Lt. Co. |
| 9-12 | Tidal marsh | Marshfield, Mass. | Brockton Gas Lt. Co. |
| 13-16 | Tidal marsh | Atlantic City, N. J. | Atlantic City Gas Co. |
| 17-20 | Muck | West Palm Beach | Florida Pub. Uts. Co. |
| 21-24 | Muck | Miami, Fla. | Florida Pr. & Lt. Co. |
| 25-28 | Cecil clay loam | Atlanta, Ga. | Atlanta Gas Lt. Co. |
| 29-32 | Cecil fine sandy loam | Raleigh, N. C. | Raleigh Gas Co. |
| 33-36 | Susquehanna clay | Shreveport, La. | Sthn. Cities Dist. Co. |
| 37-40 | Miller clay | Shreveport, La. | Sthn. Cities Dist. Co. |
| 41-44 | Miller clay | Bryan, Tex. | Community Nat. Gas Co. |
| 45-48 | Akali soil, largely sulphates | Los Angeles, Calif. | L. A. Gas & Elec. Corp. |
| 49-52 | Alkali soil, largely carbonates | Los Angeles, Calif. | L. A. Gas & Elec. Corp. |
| 53-55 | Marshall silt loam | Kansas City, Mo. | Kansas City Gas Co. |
| 56-60 | Bureau of Standards for laboratory tests. | | |

**Overflow Bottoms**

f. Miller Clay.—The soils of this series are typically developed in the first overflow bottoms of streams, usually from the Permian red bed region. They are found along the Brazos and Red Rivers in Texas and Louisiana. Considerable areas are but rarely overflowed. Approximately 2,500 square miles of Miller soils have been mapped in the States of Arkansas, Louisiana, Texas and Oklahoma. The Miller series includes soils of chocolate brown to pinkish red color, with chocolate red or pinkish red subsoils. One set of specimens is buried on the first terrace of the Red River near Shreveport and one set near the Little Brazos River about 10 miles west of Bryan, Tex.

Specimens were buried in the Susquehanna and Miller soils because they are very heavy soils and they shrink a large amount upon drying out. The effect of soil stress on the coatings should be a maximum in these soils if soil stress is due to the shrinkage and swelling of the soil.

g. Alkali Soils. — Two sets of specimens will be buried in the vicinity of Los Angeles in two locations, in one of which the soil alkali is principally sulphates and in the other the soil alkali is unusually high in carbonates. These specimens will be buried in about two months.

h. An incomplete set of specimens will be buried soon in Marshall silt loam in the vicinity of Kansas City. This soil is perhaps the most extensive soil in the United States. This is a dark colored prairie soil derived directly from the weathering of the loess mantle which was distributed over the central part of the Mississippi drainage system by the wind. This soil is not particularly corrosive nor is it likely to prove very destructive to coatings. However, it was thought that it would be advisable to bury one set of specimens where conditions are about average.

**Laboratory Tests of Coatings**

Work of the A.G.A. Research Associate.—Numerous laboratory tests of both coating materials and of coatings have been made in the past, and many are being made at the present time. These tests are valuable if for no other reason than that they show what the properties of the various coatings are. However, investigators interpret many of these tests in different ways, in fact one of the reasons why there is such a wide variety of coatings for pipe lines is because individuals have different ideas as to what a successful coating should be. Hence it is evident that in this investigation we should learn all we possibly can as to the laboratory behavior of the coatings in the test so that when we obtain the results from the buried specimens we may be able to define the properties of the best coatings.

A panoramic photograph of the surface of one specimen of each coating has been made so that there is a permanent record of the original appearance of each coating. Before the specimens were photographed a thin layer of wet clay was placed on part of the specimens, allowed to dry, and then washed off. When the specimens are removed it should be possible to tell whether the above test has any value.

A few specimens are being subjected to the accelerated weathering test for bituminous materials. This testing machine is described by Walker and Hickson in the Bureau of Standards Journal of Research, Vol. 1, No. 1, p. 1, July, 1928. About all that can be said from the results so far obtained is that the materials would be classed as high grade materials from the standpoint of accelerated weathering.

It is anticipated that before the specimens are removed next fall all the important physical characteristics of the coating materials will be determined.

An attempt is being made to develop a satisfactory method of rating the specimens when they are removed. At this time it is impossible to say how successful this will be but the few results obtained so far look promising.

**Work of the Bureau of Standards**

As a part of its contribution to this investigation, the Bureau of Standards agreed to try to develop some method of testing coatings so that at any future time it will be possible to tell something about the value of any protective coating by some short laboratory test. The first thing to do in trying to develop such a test appears to be to try some of the methods of test that are now being used and see how the results of the test compare with the performance of the coated specimens that have been buried.

One method that has been proposed (F. W. Carl, A.I.M.M.E. Proc. 1927, Page 528) consists of placing the coated pipe in an electrolyte, taking care to protect the ends, and measuring the resistance of the coating from time to time. A specimen of each of the coatings in the test was sawed into two equal parts. One of these parts was placed in a 1-gallon crock, the end with the can on being downward. The crock was filled with a 10 per cent sodium chloride solution and the resistance was measured between the pipe and a carbon electrode placed in the salt solution. The method of measuring the resistance was essentially the same as the method used to measure soil resistance with the earth-current meter, but the voltage was only 1 volt and more sensitive instruments were used to measure the current. A layer of paraffin was poured over the water to prevent evaporation. The test is still in progress, the resistance of each coating being measured every week. Twelve of the 41 specimens developed leaks in the cans and these tests are to be repeated. At the end of seven weeks 14 of the remaining coatings had a resistance so high it could not be measured with any precision. The resistance of the others decreased with the time, except in two cases where it dropped to a low value and then increased a little. The initial resistances of the different coatings varied from about 3 ohms to at least several megohms, and after seven weeks the resistances extend over about the same range. If the value of a coating depends upon its electrical resistance, some of the coatings must be certainly worthless. If a rapid rate of change of resistance indicates failure, then other coatings are of no value. The coatings do not break down at a definite time, but the resistance gradually decreases. It is difficult to interpret the results of this test at the present time.

The bureau has also started another set of tests similar to that described by K. H. Logan in The Oil and Gas Journal of May 2, 1929, Page 33. In this test the coatings are exposed to a heavy clay soil and the resistance of the coating is being measured by a method similar to that used in the salt solution tests. This test has just been started and it will probably extend over a period of several months. The boxes will be wet only at long intervals so that the effect of the drying and shrinking of the soil can be observed.

**Summary**

In order to obtain information as to the value of the important kinds of proprietary coatings that are used by the gas industry, the subcommittee on pipe coatings and corrosion of the distribution committee of the American Gas Association appointed a research associate at the Bureau of Standards last April. Sixty specimens of each of 42 coatings have been prepared and most of them have been buried. The laboratory work associated with the tests is well under way. It is planned to remove one-fourth of these specimens for examination and study next September.

## PROBLEMS IN AIR AND GAS INJECTION

(Continued from Page 83)

The reason for the failure of the output gas volume to exceed the input volume during the period of dry gas injection, is not known but may possibly be due to its ability to migrate more readily to tighter areas in the sand than that occupied by the wet gas and air. This might be explained due to the viscosity of 0.60 specific gravity gas being much less than that of air or 1.08 specific gravity wet gas.

It was clearly noticeable that the dry gas had a tendency to "channel" or bypass the oil much more readily than the air or wet gas. The air and wet gas did not show any tendency to bypass the oil during the entire period of the three years during which they were applied whereas the dry gas has given considerable trouble in this respect throughout its period of application. However, this may be due in part to the increased volumes of dry gas used. It is also noticeable that the dry gas has resulted in a marked decrease in the gravity of the oil. Had a sufficient volume of wet gas been available for use in repressuring, it is probable that excellent results would have been realized, as even at the low pressure in which it was used (10 to 45 pounds per square inch) a portion of it was readily soluble in the oil due to its high gasoline content of 3.5 gallons per 1,000 feet. Under these low pressures very little dry gas or air can be absorbed by the oil.

**Conclusions**

A study of the decline curve and a summary of the results observed during the past four years on these leases would seem to support the following conclusions with respect to the use of air, wet gas and dry gas:

1. That air may be used for repressuring purposes as a substitute for gas without disadvantages only when there is no water produced with the oil.

2. The gravity of the oil during repressuring operations will not be reduced while the natural wet gas is recirculated.

3. That dry gas has a tendency to channel more readily than either air or wet gas.

**Distribution of Gas and Air in Sands**

In cases where the operating pressures

are high the distribution of the gas and air in sands whose wells are small is best controlled by the direct application of back pressures. In the case of larger wells which will permit, it is better to adjust the length and frequency of the stroke to the point which produces only a portion of the well's potential production, and results in a high constant fluid level being maintained on the sand. The pumps in both cases should be placed as near to the bottom of the well as pumping conditions will permit in order that the face of the sand may be kept free of water.

**Repressuring Equipment for Field Tests**

Due to the expansion of repressuring operations at the present time it is becoming increasingly difficult for the operators to choose compressor equipment suitable to the particular conditions which they are encountering in recent practice. There seems to be considerable difficulty in acquiring high pressure equipment suitable for small scale field testing. Due to many unforeseen factors during the course of experimental repressuring it would be of great value to the operators to be able to obtain small equipment of a convertible nature. That is to say compressors whose cylinders or bearings may be interchangeable or replaceable in order to withstand higher pressures than those for which the present standard small equipment is designed.

## WEST TEXAS FIELDS

(Continued from Page 79)

a better appearance than is generally accredited it.

The Phillips Petroleum Co.'s No. 1 Coates, 900 feet from the north and 330 feet from the east of the W half SW, Section 17, Block 19, T.&P. Survey, Jones County, swabbed 84 bbls. of oil after topping the Noodle Creek lime at 2,526 feet and shutting down. It is a little over a half mile west of production in the Noodle Creek Pool and opens more acreage to production. Casing is being pulled to deepen.

**New Potentials**

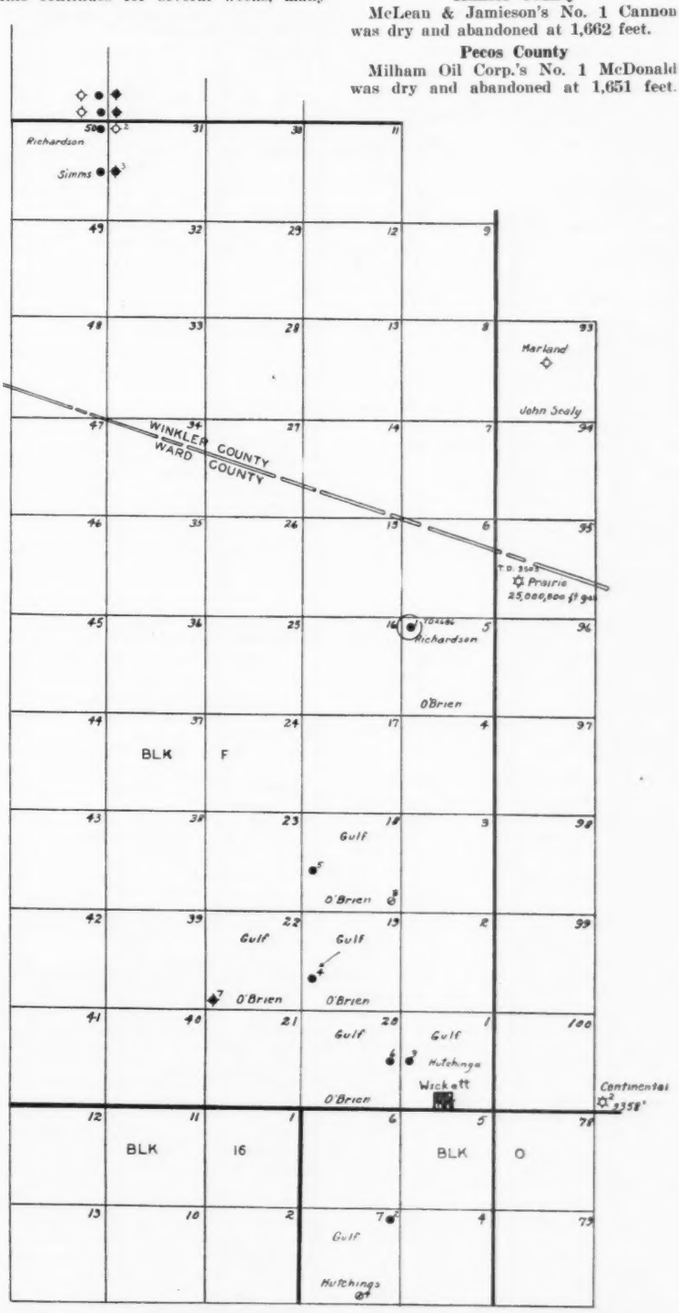
The new potential of the 2,000 and 3,000-foot pay horizons of the Howard and Glasscock Pools has been set at 58,427 bbls. by E. E. Andrews, proration umpire. This is for the period from April 1 to May 1. The previous potential was 56,544 bbls., the new potential being an increase of 1,883 bbls. The 3,000-foot pay shows a potential of 16,841 bbls., being 956 bbls. under the previous period, and the 2,000-foot pay horizon shows a potential of 41,586 bbls., an increase of 2,182 bbls. Allowable for the 3,000-foot pay is 12,385 bbls. and for the 2,200-foot pay, 11,698 bbls., a total of 24,083 bbls.

For the first quarter these pools have produced a total of 2,379,196 bbls. Total runs of the fields up to April 1 was 16,741,402 bbls.

The new potential of the Yates Pool, Pecos County, is 2,688,940 bbls. on a 12-hour gauge, a decrease of 1,523 bbls. from the previous period. The new allowance is 110,000 bbls., and due to the field being cut the West Texas district shows a decrease of 17,937 bbls. this week to a new daily average of 320,139 bbls. distribution was far above production during the week, the difference registering more than 40,000 bbls., and if this continues for several weeks, many 55,000-bbl. steel tanks will be drained of their present contents.

**YATES POOL ALLOWABLE PRODUCTION**
**APRIL 1 TO MAY 1, 1930**

| Company and lease— | Wells | Units | Potential 12 hours | Total allowance |
|---|---|---|---|---|
| California Co., Smith | 3 | 3 | 105 | 105 |
| Smith | 2 | 1 | 10 | 10 |
| Smith | 8 | 6 | 27,285 | 2,119 |
| Smith, Lease 3 | 13 | 6 | 26,020 | 2,049 |
| Smith, Lease 1 | 5 | 3 | 4,405 | 503 |
| Smith, Lease 1 | 6 | 4 | 11,288 | 794 |
| Tippett | 1 | 1 | 30 | 30 |
| Yates | 19 | 6 | 375,197 | 8,309 |
| Total | 57 | 30 | 454,340 | 13,919 |
| Continental Oil, Yates-A | 8 | 2 | 29,090 | 618 |
| Cosby et al, Smith | 2 | 1 | 660 | 660 |
| Dixie Oil Co., Thompson | 1 | 1 | 15 | 15 |
| Grabyburg Oil Co., Halff | 3 | 1 | 60 | 60 |
| River bed | 7 | 1 | 350 | 350 |
| Total | 10 | 2 | 410 | 410 |
| Gulf Prod. Co., Smith | 15 | 6 | 43,665 | 1,573 |
| Smith-B | 8 | 6 | 25,628 | 2,065 |
| Thompson | 2 | 1 | 283 | 283 |
| Yates | 23 | 16 | 178,501 | 11,201 |
| Total | 48 | 29 | 248,077 | 15,122 |
| Humble Oil & Ref., Smith-A | 13 | 6 | 23,092 | 1,630 |
| Smith-B | 7 | 4 | 5,239 | 879 |
| Total | 20 | 10 | 28,331 | 2,509 |
| Kirby Pet. Co., Tippett | 1 | 1 | 75 | 75 |
| Kirby & Edson, Tippett | 1 | 1 | 230 | 230 |
| McMan Oil & Gas, Goodrich | 1 | 1 | 160 | 160 |
| Goodrich-A | 2 | 1 | 140 | 140 |
| Richardson | 2 | 0.8 | 140 | 140 |
| Smith-A-B | 5 | 4 | 51,686 | 2,604 |
| Smith-C | 12 | 6 | 1,460 | 982 |
| Total | 22 | 12.8 | 53,586 | 4,026 |
| McMan & Continental Yates | 17 | 7 | 181,844 | 5,077 |
| Mid-Kansas & Trans., Smith | 7 | 4 | 48,489 | 2,164 |
| Smith-Taylor | 19 | 6 | 138,115 | 3,632 |
| Yates-A | 27 | 15 | 472,182 | 17,427 |
| Yates-B | 27 | 6 | 292,965 | 5,870 |
| Yates-C | 11 | 3 | 245,146 | 6,835 |
| Yates-D | 7 | 8 | 103,438 | 6,832 |
| Yates-E | 3 | 2 | 13,745 | 759 |
| Yates-F | 4 | 4 | 5,083 | 704 |
| Yates-G | 3 | 3 | 9,374 | 1,039 |
| Yates-H | 10 | 6 | 160,125 | 7,438 |
| Total | 118 | 57 | 1,488,662 | 52,700 |
| Plymouth Oil Co., Perry | 2 | 1 | 45 | 45 |
| Phillips Pet. Co., Monroe | 1 | 1 | 150 | 150 |
| Ramsey | 4 | 4 | 4,292 | 929 |
| Smith-Matador | 3 | 1 | 2,340 | 660 |
| Total | 8 | 6 | 6,782 | 1,739 |
| Shell Pet. Corp., Smith-A | 13 | 6 | 5,743 | 1,187 |
| Smith-D | 4 | 3 | 2,991 | 660 |
| Smith-E | 1 | 1 | 25 | 25 |
| Smith-B | 2 | 0.4 | 660 | 660 |
| Tippett | 11 | 4 | 74,847 | 2,720 |
| Total | 31 | 14.4 | 84,266 | 5,252 |
| Moncrief & Savoy, Smith | 3 | 1 | 1,877 | 660 |
| Simms Oil Co., Smith | 7 | 4 | 139,962 | 5,842 |
| Smith (Red Bank) | 5 | 1.4 | 1,332 | 502 |
| Total | 12 | 5.4 | 141,294 | 6,344 |
| Skelly Oil Co., Tippett | 2 | 1 | 185 | 178 |
| Transcontinental, M. A. Smith | 3 | 1 | 395 | 412 |
| Grand totals | 366 | 182.6 | 2,720,164 | 109,990 |




*Plat showing the location of Sid Richardson and others' No. 1 O'Brien, in Section 5, Block F, G.M.M.B.&S. Survey, northern Ward County, practically linking production of the area 5 miles northwest with that to the south 3 miles, and assuring a vast amount of potential producing acreage for the Gulf Production Co. The well is shut down at 2,686 feet, and sanded up after producing 60 bbls. the first hour and 30 bbls. the second hour. It is being cleaned out. The O'Brien Pool now appears as a pool good for production for 12 miles in length, and possibly 5 miles wide. Gulf's No. 4 O'Brien, the discovery well of the O'Brien Pool is marked with an arrow.*

**WEST TEXAS COMPLETIONS**
**Week ending April 5**

**Garza County**

Pandem Oil Co.'s No. 1 Stokes was drilled to a total depth of 3,018 feet, was shot with 90 quarts at 2,908-28 feet, had 300 feet of oil and 1,700 feet of water in the hole, and was dry and abandoned.

**Glasscock County**

Schermerhorn Oil Co.'s No. 3 Kloh and others was drilled to a total depth of 2,485 feet, encountered broken pay at 2,185-2,485 feet, proration test 1,770 bbls., allowance 355 bbls.

**Howard County**

California Co.'s No. 11 Dora Roberts topped the pay at 2,485 feet, was drilled to a total depth of 3,011 feet and had an initial production of 150 bbls.

**Kimble County**

McLean & Jamieson's No. 1 Cannon was dry and abandoned at 1,662 feet.

**Pecos County**

Milham Oil Corp.'s No. 1 McDonald was dry and abandoned at 1,651 feet.

Shell Petroleum Corp.'s No. 2-B Smith topped the pay at 1,630 feet, was drilled to a total depth of 1,801 feet and had an initial production of 444 bbls. Southern Crude Oil Purchasing Co.'s No. 4-A Tippett topped the pay at 317 feet, was drilled to a total depth of 375 feet and had an initial production of 437 bbls. in 20 hours. Transcontinental Oil Co.'s No. 1-A Smith was drilled to a total depth of 1,520 feet, made 6,000,000 feet of gas at 1,470-80 feet, 15,000,000 feet of gas at 1,488-90 feet, tested 63,000,000 feet of gas at 1,520 feet and was completed for a gas well. Transcontinental Oil Co. and Arkansas Fuel Oil Co.'s No. 3 Smith topped the pay at 1,464-1,531 feet and had an initial production of 40 bbls.

**Irion County**

Baker & Hodges and others' No. 1 Tankersley was dry and abandoned at 1,450 feet.

## PANHANDLE FIELDS

(Continued from Page 80)

had an initial production of 9 bbls. at 704-06 feet. A. H. Parks' No. 1 Hall made 25 bbls. at 884-95 feet. Petroleum Producers and Madden's No. 5 Deitrich had an initial production of 45 bbls. at 1,106-20 feet. Prairie Oil & Gas Co.'s No. 7 Kunkel had an initial production of 3 bls. at 1,131-38 feet. E. R. Riggs' No. 7 Keeter had an initial production of 50 bbls. at 876-84 feet. H. F. Rogers' No. 1 Dilback was dry and abandoned at 1,101 feet. Stump & Heydrick's No. 5 Daniels had an initial production of 67 bbls. at 868-93 feet. C. C. Williams and others' No. 3 Taack had an initial production of 20 bbls. at 664-72 feet. D. L. Wolf's No. 5 Hill had an initial production of 40 bbls. at 1,015-22 feet. Wo-Mack Oil Co.'s No. 4 Stephens Roach Co. had an initial production of 30 bbls. at 741-42 feet.

### RANGER COMPLETIONS
**Week Ending April 5**

**Brown County**

Hynes and others' No. 1 Marr had an initial production of 18 bbls. at 1,200-09 feet. Phillips Petroleum Co.'s No. 1 Williams-B was drilled to a total depth of 1,137 feet, was plugged back to 1,123 feet, encountered gas and water at 1,110-37 feet and had an initial production of 1,600,000 feet of gas. Phillips Petroleum Co.'s No. 1-A Williams was drilled deeper from 830 feet to 1,103 feet and had an initial production of 500,000 feet of gas at 1,094-1,103 feet, 146 pounds rock pressure. Ven-Mex Oil Co. of Texas' No. 25 Hickman-A was drilled to a total depth of 1,261 feet, was shot with 20 quarts at 1,236-56 feet and had an initial production of 5 bbls. on pump. Young Brothers' Alexander & Woodley's No. 25 Hickman was drilled to a total depth of 1,309 feet, encountered oil pay at 1,291-1,307 feet and had an initial production of 160 bbls. of oil. Baker Brothers' No. 3 Hall was drilled to a total depth of 537 feet, encountered oil sand at 490-94 feet and was dry and abandoned. Greene Production Co.'s No. 2 McCulley was drilled to a total depth of 1,703 feet, topped the lime at 1,588-1,703 feet, was shot with 110 quarts at 1,588-1,703 feet and had an initial production of 8 bbls. Its No. 3 McCulley location was abandoned.

**Callahan County**

Campbell Oil Corp.'s No. 1 Cutbirth was temporarily abandoned. H. D. Creath's No. 1 Boatrights location was abandoned. Humble Oil & Refining Co.'s No. 2 Jackson-G was drilled to a total depth of 1,280 feet and was dry and abandoned at 1,280 feet. Humble Oil & Refining Co. and Bateman's No. 2 Jackson was dry and abandoned at 1,191 feet.

**Comanche County**

Producers & Contractors Corp.'s No. 1 Cogburn had an initial production of 1,036,680 feet of gas at 2,673-2,719 feet.

**Coleman County**

Greene Production Co. and E. L. Chapman's No. 1 Barton was dry and abandoned at 2,007 feet. Homaokla Oil Co.'s No. 1 Hutchings was drilled to a total depth of 3,160 feet, was plugged back to 2,862 feet, was shot with 159 and 30 quarts at 2,840-68 feet and had an initial production of 1,000,000 feet of gas.

**Eastland County**

Phillips Petroleum Co.'s No. 1 Stracener was dry and abandoned at 3,145 feet.

**Parker County**

Bratcher and others' No. 1 Womack was dry and abandoned at 2,400 feet.

**Palo Pinto County**

Pennington's No. 1 fee was shot with 40 quarts at 1,260-80 feet and had an initial production of 8 bbls. and was drilled to a total depth of 1,287 feet.

**Stephens County**

Loftin & Jordon's No. 1 Smith was drilled to a total depth of 2,241 feet, and made 3,250,000 feet of gas at 2,236-40 feet with 645 pounds rock pressure. Phillips Petroleum Co.'s No. 1 Sykes was plugged and abandoned.

**Shackelford County**

Albany Oil Co.'s No. 1 Reynolds-C was dry and abandoned at 1,273 feet. Callahan & Carter's No. 1 Nail was dry and abandoned at 956 feet. L. D. Hill's No. 2 Walker was dry and abandoned at 808 feet. Roeser & Pendleton's No. 1 Scott had an initial production of 40 bbls. at 1,601-08 feet. Sedwick & Webb's No. 1 Morris & Buey-A was dry and abandoned at 1,704 feet. E. J. Stump's No. 1 Brewster had an initial production of 150 bbls. at 2,104-17 feet. Union Oil of Nevada's No. 1 Grimes was dry and abandoned at 1,316 feet.

### PANHANDLE COMPLETIONS
**Week Ending April 5**

**Gray County**

Champlin Refining Co. and Danciger's No. 4 Cook-Faulkner was dry and abandoned at a total depth of 1,980 feet. Danciger and others' No. 11 Jackson was drilled to a total depth of 3,025 feet, topped the pay at 2,906 feet and at 3,023 feet and had an initial production of 175 bbls.

**Hutchinson County**

American Refining Co.'s No. 7 Weatherby topped the pay at 2,982 feet, was drilled to a total depth of 3,000 feet, was shot with 90 quarts at 2,982-3,000 feet and had an initial production of 50 bbls.

**Wheeler County**

Murchison & Fain's No. 9 Close was drilled to a total depth of 1,693 feet and had an initial production of 10,000,000 feet of gas from 1,584-1,690 feet.

## ECONOMICAL OPERATION OF SMALL OIL WELLS

(Continued from Page 81)

hours of service. Today with improved road conditions, ease of transportation by automobile, widespread telephone service and improved supplies, machinery and equipment, the oil workers' task is greatly improved.

Let us pay reverent tribute to the memory of those pioneers, engineers and business men through whose untiring zeal we have reached the state of progress we now enjoy, not forgetting the hearty co-operation and valuable suggestions from the farm-foremen, pumpers and roustabouts.

## CONTINENTAL ENTERS DALLAS

DALLAS, Tex., Apr. 7.—The Continental Oil Co. with headquarters in Ponca City, Okla., will enter this city with a bulk station and a number of service stations according to plans announced this week. The announcement was made following a visit of D. J. Moran, president and a party of company officials. The Holland-Martin Oil Co. of this city and Fort Worth will represent the company.

A large bulk station is to be erected immediately. Work will also start soon on seven new service stations. The company expects to build additional facilities before the end of the year.

## OPENS OFFICES IN CHICAGO

CHICAGO, Apr. 5.—The Security Petroleum Co. of Kansas City, Mo., has opened offices at Room 1744, Straus Building, Chicago. E. A. Causino is vice president in charge of the Chicago sales division.

## Louisiana-Arkansas Refiners Lower Runs Under Six-Day Plan

SHREVEPORT, La., Apr. 5.—The "six-day run" idea appears to have taken hold to a considerable extent among refiners in the North Louisiana-Arkansas division though those who have endorsed it were already operating on reduced schedules and taking advantage of the opportunity to carry out routine repairs, alterations, etc. The reduction was effected by cutting throughput or cutting out one or more units of the plant for overhauling. In two cases, however, there has been an absolute shut down.

The Shreveport-El Dorado Pipe Line Co. shut down its Jewella plant for a week consolidating the off time rather than cutting daily runs, and utilized that period for repairs. The Crystal Oil Refining Corp.'s Cedar Grove plant is shut down for 60 to 90 days with prospects of a complete overhauling and modernization program in view. The Graver Corp. of Chicago has submitted plans and estimates but just what the proposed changes will be will be determined to a considerable extent by the development of new sources of crude oil. Provided satisfactory connections are made one type of equipment designed to handle a particular grade of oil would be installed, if connections for a source of crude of another quality are effected, another type will be employed.

Meanwhile Louisiana Oil Refining Corp. is running sufficient additional crude and cracking stocks to take care of Crystal's requirements, having cut its own runs about 17 per cent thereby maintaining operations on about an even keel. With respect to most of the other plants in this division no additional reduction in runs was necessary in order to fall in line with the recommendations for a six-day week as they were not operating at capacity and were reducing their stocks of refined products. Houston Oil Co., for instance, is running at 50 per cent of capacity. The Texas Company's plant has cut its runs almost as much while engaged in routine repairs. Lion Oil Refining Co. has cut its runs 20 per cent, Root Refining Co. is running its normal charges but until recently had been operating at considerably less than capacity and even under the normal basis for the last several weeks while engaged in routine repairs and alterations. Simms Oil Co. was shut down last month for repairs and is running less oil than it did before the current retrenchment period, in which it is reducing its stocks. In general, all refiners in this division are operating now more conservatively and did not need to make the six-day week recommendation a special item in their programs.

## NAVY ADVERTISES FOR BIDS

WASHINGTON, D. C., Apr. 5.—The Navy Department is advertising for bids for grease, lubricating oil and other products. The bids will be opened in this city April 22, 1930. Quantities called for are from 500 pounds to 21,000 pounds, deliveries to be made at several ports of the Pacific Coast.

## ATLAS TAKES LARGER OFFICES

CHICAGO, Apr. 5.—The Atlas Petroleum Co. has moved its headquarters from the fifteenth to the eleventh floor of the building at 624 South Michigan Avenue, doubling its office space.

## WILDCAT OPERATIONS IN WEST TEXAS

(Continued from Page 79)

**CROCKETT COUNTY**

| | |
|---|---|
| California Co.'s No. 2 Shannon, Lease No. 3, 258 ft. [illegible] and 2,997 ft. E of Sec. 42, T.C.R.R. Sur. | Drlg. 1,260 ft.; top salt 1,025 ft. |
| Doleman & Moore's No. 1 Perner, 3,135 ft. from N and 1,485 ft. from E of Sec. 36, Blk. 2, I.&G.N. Sur. | Location. |
| W. W. Donnelly's No. 1 Middle-Buster, Sec. 11, Blk. 9, D.&S.E.R.R. Sur. | 6,000,000 ft. gas 1,662 ft.; shut down 1,755 ft. |
| Lewis & Daniels' No. 1 Pecos River bed, 19 yds. S and 37° E of NW cor., Sec. 33, Blk. 1, I.&G.N. Sur. | Shut down 1,407 ft. |
| Magnolia Pet. Co.'s No. 1 Hoover, 2,310 ft. from N and 330 ft. from E of Sec. 12, Blk. 1, G.C.&S.F.R.R. Sur. | Top salt 660 ft.; show gas 1,858-1,950 ft.; fishing 2,575 ft.; 1 gal. oil per hr. from 2,205-10 ft. |
| Trans-Texas Oil Co.'s No. 2 Shannon, 983 ft. from S and 1,873 ft. from E line of Sec. 42, T.C.R.R. Sur. | Drlg. 325 ft. |

**CULBERSON COUNTY**

| | |
|---|---|
| Grisham & Hunter Oil Corp.'s No. 1 Seay, 330 ft. from S and W of Sec. 16, Blk. 59, Twp. 7, T.&P.R.R. Sur. | Shut down 3,509 ft. |
| Grisham & Hunter Corp.'s No. 1 Garren, 2,310 ft. from S and 330 ft. from E of Sec. 18, Blk. 89, P.S.L. Sur. | Drlg. 495 ft. |
| Hickey & Stiver's No. 1 C. O. Finley, 600 ft. N and 1,980 ft. W. Sec. 20, Blk. 82 | Small show oil 1,331 ft.; drlg. 2,895 ft. |
| Kornrumpf et al's No. 1 Garren, 330 ft. S and W, Sec. 15, Blk. 79, Public School Land | Spudded and shut down. |
| West Coast Oil & Exploration Co.'s No. 1 McGregor, C NW, Sec. 14, Blk. 81 | Slight show oil 740 ft.; shut down 875 ft.; may abandon. |
| Scott & Dittman's No. 1 Miller, 1,160 ft. N and 2,480 ft. E. Sec. 1, Blk. 97, Public School Land | Oil show 2,528 ft.; shut down 3,508 ft. |

**ECTOR COUNTY**

| | |
|---|---|
| Amerada and Skelly's No. 1-B University, 990 ft. from S and 440 ft. from E line, Sec. 2, Blk. 35, University Land | Location. |
| Cosden Oil Co.'s No. 1 Kloh & Rumsey, 990 ft. S and 330 ft. E NW cor., Sec. 17, Blk. 44, Twp. 3s, T.&P. Sur. | Drlg. 3,005 ft. |
| Cosden Oil Co.'s No. 2-A University, NE cor. S half NE, Sec. 1, Blk. 35, University Land | Drlg. 2,005 ft. |
| Cosden Oil Co.'s No. 2 University-B, 2,310 ft. S and 440 ft. W of NE cor. of Sec. 2, Blk. 35, University Land | Building rig on new location. |
| C. P. Davis et al's No. 1 Hendricks, C SW Sec. 46, Blk. 42, Twp. 2s, T.&P.R.R. Sur. | Shut down 1,335 ft. |
| Gibson & Johnson's No. 1 Scharauer, 990 ft. from N and E of Sec. 4, Blk. B-15, Public School Land | Drlg. 1,900 ft. |
| Gulf Prod. Co.'s No. 1 Kloh-G, 330 ft. N and 440 ft. E of SW cor., Sec. 5, Blk. 44, Twp. 3s, T.&P. Sur. | Top salt 1,105 ft.; drlg. 1,405 ft. |
| Gulf Prod. Co.'s No. 1 State, 330 ft. N and 440 ft. W of SE cor. of S 160 ac. of Sec. 1, Blk. 35, University Land | Top lime 3,100 ft.; drlg. 3,405 ft. |
| Gulf Prod. Co.'s No. 2 State, 330 ft. S and 440 ft. W of NE cor. S 160 acres, Sec. 1, Blk. 35, University Land | Building rig. |
| Gulf Prod. Co.'s No. 1 State-A, 330 ft. S, 440 ft. W of NE cor. of N half of S half, Sec. 2, Blk. 35, University Land | Drlg. 3,370 ft. |
| Gulf Prod. Co.'s No. 2 State-A, 330 ft. N and 440 ft. W of SE cor. N half S half, Sec. 2, Blk. 35, University | Building rig. |
| Humble Oil & Ref. Co.'s No. 2 Kloh-Rumsey-D, 2,310 ft. S and 440 ft. E of NW cor. of Sec. 7, Blk. 44, Twp. 3s, T.&P. Sur. | Top pay 3,645 ft.; flowed 784 bbls. 24 hrs.; drlg. 3,730 ft. |
| Humble et al's No. 3 Kloh-D, 2,325 ft. N and 440 ft. E of SW cor., Sec. 7, Blk. 44, Twp. 3s | Drlg. 3,510 ft. |
| Humble et al's No. 4 Kloh-D, 322 ft. N and 440 ft. E of SW cor., Sec. 7, Blk 44, Twp. 3s | Set 6⅝-in. casing 3,330 ft. |
| Humble Oil & Ref. Co.'s No. 5-D Kloh-Rumsey, 1,674 ft. S and 440 ft. E of NW cor., Sec. 7, Blk. 44, Twp. 3s, T.&P. Sur. | Drlg. 2,510 ft., anhydrite. |

Humble Oil & Ref. Co.'s No. 6-D Kloh-Rumsey, 1,014 ft. S and 440 ft. E of NW cor., Sec. 7, Blk. 44, Twp. 3s, T.&P. Sur. ..... Drlg. 3,025 ft.

Humble Oil & Ref. Co.'s No. 7-D Kloh et al, 330 ft. from N and 440 ft. from W of Sec. 7, Twp. 3s, Blk. 44, T.&P. Sur ..... Drlg. 2,427 ft.

Humble Oil & Ref. Co.'s No. 8 Kloh-D, 986 ft. N and 440 ft. E of SW cor., Sec. 7, Twp. 3s, Blk. 44, T.&P. Sur. ..... Location.

Humble Oil & Ref. Co.'s No. 2 York, 990 ft. S and 440 ft. E of NW cor. of Sec. 16, Blk. 44, Twp. 3s, T.&P. Sur. ..... Top lime 3,130 ft.; top pay 3,614 ft.; total depth 3,740 ft.; plugged back to 3,693 ft.; shot 300 qts. 3,595-3,693 ft.; produced 40 bbls. first 24 hrs.

Humble Oil & Ref. Co.'s No. 3 York, 1,650 ft. S and 440 ft. E of NW cor., Sec. 16, Blk. 44, Twp. 3s, T.&P. Sur. ..... Show oil 3,665 ft.; drlg. ahead 3,730 ft.; flowed 496 bbls.

Humble et al's No. 4 York, 323 ft. S and 440 ft. E of NW cor., Sec. 16, Blk. 44, Twp. 3s ..... Drlg. 2,560 ft.

Humble et al's No. 5 York, 2,334 ft. S and 440 ft. E of NW cor., Sec. 16, Blk. 44, Twp. 3s ..... Drlg. 3,345 ft.

Humble et al's No. 6 York, 2,991 ft. S and 440 ft. E of NW cor., Sec. 16, Blk. 44, Twp. 3s ..... Waiting on cement to set 3,320 ft.

Humble Oil & Ref. Co.'s No. 7 York, 1,650 ft. N and 440 ft. E of SW cor., Sec. 16, Blk. 44, Twp. 3s ..... Cellar.

Independent Oil & Gas Co.'s No. 1 Eidson, 1,250 ft. S and 2,144 ft. E of NW cor., Sec. 6, Blk. 44, Twp. 3s, T.&P. Sur. ..... Topped salt 1,020 ft.; drlg. 1,349 ft.

H. F. Wurtz' No. 1 E. A. Ibbetson et al, 330 ft. from N and E lines of NW. Sec. 16, Blk. 46, Twp. 3s, G.M.M.Br.&A. Sur. ..... Spudded and shut down 30 ft.

Landreth Prod. Corp.'s No. 2 University-S, 330 ft. S and 440 ft. W of NE cor. Sec. 2, Blk. 35, University Land ..... Top salt 1,210 ft.; drlg. 3,555 ft.

T. P. Coal & Oil Co.'s No. 1 McKenzie, 1,650 ft. from S and 330 ft. from E of Sec. 28, Blk. 45, Twp. 2s, T.&P. Sur. ..... Cem. 10-in. casing 815 ft.

Transcontinental Oil Co.'s No. 1 University, 1,650 ft. from N and 440 ft. from E line of Sec. 3, Blk. 35, University Land ..... Location.

R. R. Penn et al's No. 1 Goodman et al, 2,640 ft. N and 330 ft. W of SE cor. Sec. 27, Blk. 44, T.&P.R.R. Sur. .. Location.

Simms Oil Co. et al's No. 1 University (was Landreth Prod. Corp.), 2,310 ft. N, 440 ft. W SE cor., Sec. 1, Blk. 35, University Land ..... Drlg. 2,815 ft.

Shell Pet. Corp.'s No. 1 Jones, Sec. 6, Blk. 44, Twp. 3s, T.&P.R.R. Sur. ..... Fishing 2,500 ft.

Skelly Oil Co. et al's No. 1 University-A, 990 ft. S and 440 ft. N of NE cor. Sec. 1, Blk. 35, University ..... Drlg. 2,580 ft.

Skelly Oil Co.'s No. 2-A University, 330 ft. S and 440 ft. W of NE cor., Sec. 1, Blk. 35, University Land ... Run 10-in. casing 835 ft.

The Texas Company's No. 7 Connell, 2,310 ft. from S and 440 ft. from W, Sec. 1, Blk. B-16, Public School Land ..... Moving in material.

**EL PASO COUNTY**

Laytex's No. 1 Malone, 2,200 ft. SW and NW, Sec. 46, J. M. Day Sur. ..... Shut down 1,481 ft.

**EDWARDS COUNTY**

Intercoastal Oil Co.'s No. 1 Malone, 2,200 ft. SW and NW, Sec. 46, J. M. Day Sur. ..... Shut down 3,000 ft.

**FISHER COUNTY**

Cranfill & Reynolds' No. 1 Johnson, 440 ft. from N and 1,540 ft. from W of Sec. 3, Blk. R, Richardson Sur... Drlg. 2,495 ft.

Cranfill & Reynolds' No. 2 Willingham, 330 ft. from N and E of NW, Sec. 199, B.B.B.&C.R.R. Sur. ..... Drlg. 900 ft.

**GAINES COUNTY**

Humble Oil Ref. Co.'s No. 1 Caswell, 660 ft. S and E of NW cor. of Sec. 23, Blk. A-27, Public School Land ... Rigging up.

**GARZA COUNTY**

Pandem Oil Corp.'s No. 1 Justice, 330 ft. from S and W of Sec. 12, Blk. 6, H.&G.N. Sur. ..... Location.

**GLASSCOCK COUNTY**

California Co.'s No. 1 Baker, 2,310 ft. from S and 990 ft. from W, Sec. 23, Twp. 2s, Blk. 33, T.&P. Sur. ..... Shut down 2,150 ft.

California Co.'s No. 1 Jones, 330 ft. S from N and E lines, Sec. 25, Blk. 33, Twp. 2s, T.&P. Sur. ..... Derrick.

Group No. 1 Oil Co. and Continental Oil Co.'s No. 1 Miller, 330 ft. S and 990 ft. E of NW cor. Sec. 162, Blk. 29, W.&N.W.R.R. Sur. ..... Show oil 1,400-02 ft.; shut down 1,500 ft.; tested on swab for 26 hrs., all water, no oil.

Group No. 1 Oil and Continental Oil Co.'s No. 1 Phillips, 330 ft. S and 990 ft. E NW cor., Sec. 24, Blk. 33, Twp. 2s, T.&P.R.R. Sur. ..... Show oil 1,360 ft., 1,700 ft. and 1,800 ft.; total depth 2,312 ft.; top pay 2,127 ft.; swabbing 85 bbls. hr.

F. H. E. Oil Co.'s No. 1 Cox, 330 ft. from S and E of SW Sec. 8, Blk. 33, Twp. 2s, T.&P. Sur. ..... Drlg. 2,340 ft.

Kirby Pet. Co. et al's No. 2 Phillips, 990 ft. S and 2,310 ft. E of NW cor., Sec. 23, Blk. 33, Twp. 2s, T.&P. R.R. Sur. ..... Location.

Kirby Pet. Co. et al's No. 3 Phillips, 1,650 ft. S and 2,310 ft. E of NW cor., Sec. 23, Blk. 33, Twp. 2s, T.&P. R.R. Sur. ..... Drlg. 510 ft.

Shell Pet. Corp.'s No. 1 Phillips, 1,650 ft. S and 2,310 ft. W of NE cor., Sec. 23, Blk. 33, Twp. 2s, T.&P.R.R. Sur. ..... Location.

Timberlake & Snyder's No. 1 Meek, 2,310 ft. W and 1,600 ft. N of SE cor., Sec. 7, Blk. 34, Twp. 3s, T.&P. Sur.. Show oil 970 ft.; drlg. 2,300 ft.

World Oil Co.'s No. 3-C McDowell, 2,310 ft. from S and W of NE cor., Sec. 21, Blk. 34, Twp. 2s, T.&P. Sur. .. Location.

**HOWARD COUNTY**

American Maracaibo Co.'s No. 4-A Settle, 1,040 ft. S and 330 ft. E of NW cor., Sec. 6, Blk. 32, Twp. 2s, T.&P. Sur. ..... Total depth 2,260 ft.; top pay 2,177-2,260 ft.; pumped 100 bbls. oil, 300 bbls. water; may drill deeper.

Cosden Oil Co.'s No. 6 Roberts-A, 200 ft. N and E of SW cor., Sec. 129, Blk. 29, W.&N.W.R.R. Sur. ..... Sulphur water 1,433-46 ft.; shut down 1,456 ft.

Cox et al's No. 1 Flowers, C NE, Sec. 42, Blk. 31, Twp. 1n, T.&P.R.R. Sur. ..... Location.

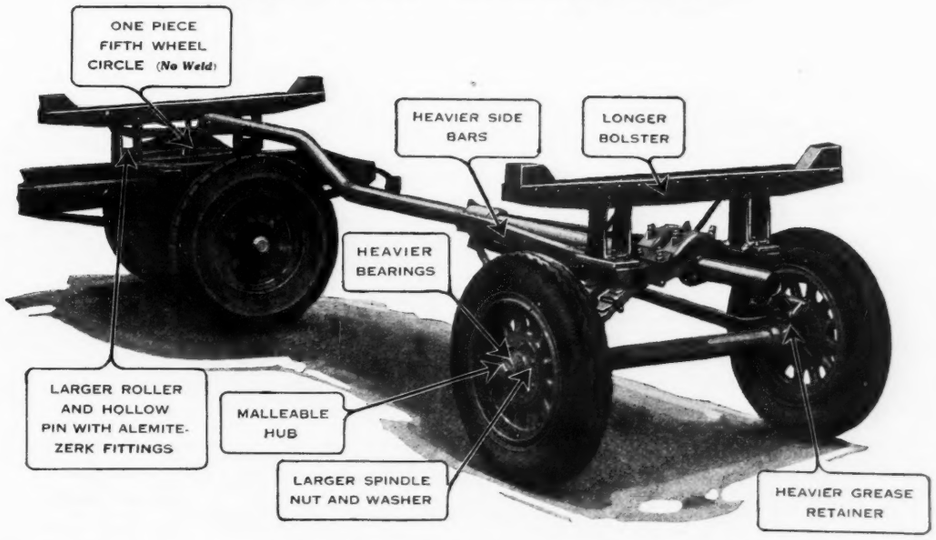
McGinley-Sigler's No. 1 Hyman-C, 330 ft. N and 990 ft. W SE cor., Sec. 93, Blk. 29, W.&N.W.R.R. Sur. ..... Location.

Merriwether's No. 1 Smith, 150 ft. from S, 2,490 ft. from W, Sec. 45, Blk. 33 ..... Drlg. 2,360 ft.

Moody Oil Corp.'s No. 23-B Roberts, 990 ft. from N and W of Sec. 137, Blk. 29 ..... Set 10-in. casing; shut down 261 ft.

Simms Oil Co.'s No. 2 Clay, 330 ft. from S, 2,310 ft. from W, Sec. 127, Blk. 29 ..... Total depth 3,160. ft.; shot 90 qts. 2,400-60 ft.; plugged back 2,520 ft.; initial production 40 bbls.


# 8 New Reasons Why Kingham Trailers Are Always in Demand


ONE PIECE FIFTH WHEEL CIRCLE (No Weld)
HEAVIER SIDE BARS
LONGER BOLSTER
HEAVIER BEARINGS
LARGER ROLLER AND HOLLOW PIN WITH ALEMITE-ZERK FITTINGS
MALLEABLE HUB
LARGER SPINDLE NUT AND WASHER
HEAVIER GREASE RETAINER

# KINGHAM TRAILER COMPANY

INCORPORATED

LOUISVILLE, KENTUCKY

Sinclair O. & G. Co.'s No. 1 Montgomery et al, 2,310 ft. from N and W of Sec. 11, Blk. 30, Twp. 1s, T.&P. Sur. ..... Location.

**HUDSPETH COUNTY**

California Co.'s No. 1 University, 3,821 ft. N and 2,554 ft. E of SW cor., Sec. 19, Blk. E ..... Drlg. 4,156 ft.; slight oil show 4,021-23 ft.

Western States Oil Co.'s No. 1 Moore, C SE, Sec. 16, Blk. 71, Twp. 6, T.&P. Sur. ..... Shut down 2,760 ft.

Western States Oil Co.'s No. 1 Gardner & Moseley, NE NW, Sec. 12, Blk. 18 ..... Fishing 3,155 ft.

**IRION COUNTY**

Banner Oil Co.'s No. 2 Nutt, 150 ft. from N and E lines W half, Su.d. 5, Gonzales County School Land ..... Location.

Beesley's No. 1 Sawyer Cattle Co., 1,320 ft. N and E of SW cor., Sec. 3,032, Blk. 24, H.&T.C.R.R. Sur. ..... Water 1,705-10 ft.; more water 1,730-40 ft.; shut down 1,950 ft.

Brown & Fox's No. 2 Tankersley, Sec. 712, F. Willig Sur. ..... Show oil 1,318 ft.; pumped 41 bbls. daily, 5 per cent water, 38.7 gravity; total depth 1,500 ft.; plugged back to test show oil at 1,335 ft.

Crawford Oil Co.'s No. 1 Williams, 450 ft. from N, 150 ft. from W, Subd. 8 ..... Shut down 1,105 ft.

Cromwell's No. 2 Nutt, 504 ft. from N and 1,162 ft. from W of Subd. 6, Gonzales County School Land... Drlg. 1,005 ft.

Glenn et al's No. 1 Tankersley, NW cor. SW, Sec. 4, G.C.&S.F.R.R. Sur. ..... Location.

Kingwood Oil Co. et al's No. 1 J. D. Suggs, SE NW SE, Sec. 19, Blk. 7, H.&T.C. Sur. ..... Show gas 7,656 ft.; encountered 2,400 ft. sulphur water 7,818 ft.; plugged back to 6,700 ft.;

P. H. Williams' No. 1 Ash, C of Sec. 20, Washington County ..... Show oil 7,931 ft.; drlg. 8,228 ft.

Straughan and Texannati Oil Co.'s No. 1 Nutt, 150 ft. N and E of NW NW, Blk. 6, Gonzales County School Land ..... Shut down 119 ft.

**JONES COUNTY**

Atkinson & Sandifer's No. 1 Byron, 300 ft. from S and E of Sec. 17, Edward Mills Sur. ..... Pulling big pipe 2,492 ft.

Mid-Tex Oil Co.'s No. 1 King, 330 ft. E of river and 800 ft. S of N line, Subd. 1, Sec. 197, M. Bueno Sur... Topped sand 1,980 ft.; total depth 1,965, steel line measurement; 800 ft. oil in hole in 12 hrs. gravity 36.0.

Phillips Pet. Co.'s No. 1 Coates, 900 ft. S and 330 ft. W of NE cor. W half of Sec. 17, Blk. 19, T.&P.R.R. Sur. ..... Total depth and top pay 2,526 ft.; 800 ft. oil in hole; to test.

Shabeen et al's No. 1 King ..... 800 ft. fluid in hole; shut down 2,204 ft.; top pay 2,061 ft.; cleaning out after shot.

**KENT COUNTY**

White & Smith's No. 1 Pursley estate, 1,320 ft. from E and 2,640 ft. from S of Sec. 8, Blk. H, H.&T.B. Sur... Shut down 273 ft.

**LAMB COUNTY**

Graham Oil & Gas Co.'s No. 1 Ellwood, CWL, Sec. 9, Blk. T, T. A. Thompson Sur. ..... Shut down 4,428 ft.

**LOVING COUNTY**

California Co.'s No. 1 Allen, 330 ft. from SE and SW of Sec. 90, Blk. 1, W.&N.W. Sur. ..... Drlg. 2,145 ft.; top salt 770 ft.

California Co.'s No. 1 Reagan & McElvain, 330 ft. SW of NE line and 330 ft. SE of NW line, Sec. 84, Blk. 1, W.&N.W.R.R. Sur. ..... Drlg. 975 ft.; top salt 771½ ft.

Lockhart & Co.'s No. 2 Bowen & Wells, 330 ft. from NE and SE of Sec. 92, Blk. 1, W.&N.W. Sur. ..... Drlg. 2,250 ft.

Hadlock et al's No. 2 Russell, 1,650 ft. SW of NE line, 2,310 ft. NW of SE line, Sec. 80, Blk. 1, W.&N.W. R.R. Sur. ..... Rigging up and shut down.

Lockhart & Co.'s No. 2 fee, 676 ft. S, 330 ft. W. Sec. 91, Blk. 1, W.&N.W. Sur. ..... Spudded 140 ft.; shut down.

Lockhart & Co.'s No. 3 Hubbard, 1,650 ft. from NE line. 330 ft. NW line of Sec. 83, Blk. 33, H.&T.C.R.R. Sur.. Location.

Lockhart & Co.'s No. 5 Hubbard, 1,650 ft. SW of NE line and 330 ft. SE of NW line Sec. 83, Blk. 33, H.&T.C. Sur. ..... Top pay 2,305-08 ft.; swabbed 33 bbls.; drlg. 3,000 ft.

Lockhart & Co.'s No. 1 Wheat-H, 990 ft. from NE and SE lines of Sec. 85, Blk. 33, T.&P. Sur. ..... Shut down 5,078 ft.

Lockhart's No. 1 Wheat & Ramsey, 440 ft. from NE and NW of Sec. 83, Blk. 1, W.&N.W. Sur. ..... Cem. 10-in. casing 704 ft.

**LYNN COUNTY**

Lubewell Oil Co.'s No. 1 May, 2,310 ft. S, 2,310 ft. W, Sec. 10, Blk. 7, E.L.R.R. Sur. ..... Shut down 190 ft. for casing.

George McCamey's No. 1 Edwards, 165 ft. N and E, Sec. 5, Blk. 2, L.S.&W. Sur. ..... Top salt 2,140 ft.; oil show 1,580-90 ft.; hole full sulphur water 4,730 ft.; set 6-in. casing 4,733 ft.; shut down 5,040 ft.

**MENARD COUNTY**

Cromwell & Duffey's No. 2 Winslow, 250 ft. S and E of NW cor. NE of NE, Sec. 36, J. H. Gibson Sur. ..... Drlg. 2,720 ft.

I. C. Barnett's No. 2 Callan, Sec. 1, 1,050 ft. from S, 1,190 ft. W ..... 2½ bbls. water hourly, 1,100,000 ft. gas 1,268 ft.

Priest's No. 1 Sorrel, 1,000 ft. from E and 200 ft. from S cor., Sec. 132, E.L.R.R. Sur. ..... Shut down 1,585 ft.

**MIDLAND COUNTY**

Pure Oil Co.'s No. 1 Hutt, 2,310 ft. from N and 330 ft. from E of Sec. 14, Blk. 38, Twp. 4s, T.&P. Sur. ... Total depth 580 ft.

**MITCHELL COUNTY**

Magnolia Petroleum Co.'s No. 7 Mary Foster, 330 ft. from N and W line of Sec. 17, Blk. 29, Twp. 1s, T.&P.R.R. Sur. ..... Drlg. 2,200 ft.

Morrison et al's No. 2 Morrison, 2,390 ft. from N and 660 ft. from E of Sec. 31, Blk. 28, Twp. 1n, T.&P. R.R. Sur. ..... Drlg. 1,525 ft.

Teas & Wheeler's No. 1 Radford, 1,320 ft. N and W of Sec. 1, Blk. 27, T.&P. Sur. ..... Shut down 5,002 ft.

**PECOS COUNTY**

Angelo Pet. Co. et al's No. 1 McKenzie, 480 ft. from N and 330 ft. E of CNL, Sec. 3, Blk. 604, G.C.&S.F. Sur.. Shut down 2,144 ft.

Atlantic O. P. Co.'s No. 1 Shearer, 330 ft. from NW and SW, Sec. 107, Blk. 10, H.Y.N.R.R. Sur. ..... Show oil and gas 1,052 ft. and 1,170 ft.; top pay 1,438 ft.; plugged back to 1,459 ft.; swabbing 70 bbls. oil, 50 per cent water.

Black et al's No. 1 Pecos Valley Oil Co., 1,520 ft. from SE and 1,120 ft. from SW of Sec. 34, Blk 3, H.&T.C. R.R. Sur. ..... Spudding.

Cardinal Oil Co.'s No. 1 Tippett-Kirby, 330 ft. W and 1,350 ft. N from CSL, Sec. 40, Blk. 194, G.C.&S.F. R.R. Sur. ..... Total depth 523 ft.; top pay 440 ft.; 400 ft. oil in hole.

Cardinal Oil Co.'s No. 7 Torborg, 150 ft. from S and W of Sec. 539, A.&B. Sur. ..... Location.

California Co.'s No. 1 Jasper Co. Realty Co., 165 ft. from NE line and 165 ft. from SE line of California Co.'s 160 acres, Sec. 21, Blk. 10, H.&G.N.R.R. Sur. ..... Spudding 100 ft.

Continental Oil Co.'s No. 1 Bennett, C S, Sec. 68, Blk. 10, H.&G.N.R.R. Sur. ..... Spudding.

Cosby Prod. & Ref. Co.'s No. 1 Cordova, 330 ft. from N and E of S 320 ac., Sec. 11, Blk. 11, H.&G.N. Sur. ... Top salt 725 ft.; shut down 1,950 ft.

Cosden Oil Co.'s No. 1 McDonald, 350 ft. from N and E of Sec. 1, H.E.&W.T. Sur. ..... Flowing water 1,645 ft.; shut down 2,016 ft.

Cromwell et al's No. 1 University, 1,980 ft. from S and 2,310 ft. from E, Sec. 16, Blk. 16 ..... Shut down 445 ft.

Dixie Oil Co.'s No. 4 Torborg, 450 ft. from W and 150 ft. from S of E half, Sec. 539, A.&B. Sur. ..... Shut down 225 ft.

Fisher & Lowrie's No. 1 Webb, C, Sec. 3, Blk. 203, Tillman & Walters Sur. ..... Location.

A. M. Griffith's No. 1 Ferrenbach et al, 2,112 ft. from W line, 1,320 ft. from S line, Sec. 9, Blk. 603, G.C.&S.F. Sur. ..... Shut down 2,850 ft.

Galt-Brown's No. 1 Thompson, 660 ft. from S and 1,100 ft. from E, Sec. 71, Blk. 194, G.C.&S.F. Sur. ..... Top salt 730 ft.; drlg. 1,300 ft.

Hayes et al's No. 1 Lea, C NW of NE, Sec. 9, Blk. 106, T. & St.L. Sur. ..... Location.

Husaman Oil Co.'s No. 1 Esters, 960 ft. from N and 300 ft. E, Sec. 83, Blk. OW, T.M.R.R. Sur. ..... Shut down 1,675 ft.; 100 ft. sulphur water 1,661-75 ft.

Independent Oil & Gas Co.'s No. 1 Jasper County School Land, 1,160 ft. from SE line, 160 ft. from NE line, Sec. 21, Blk. 10, H.&G.N.R.R. Sur. ..... Drlg. 620 ft.

Landreth Prod. and Henshaw Bros.' No. 2-I University, 330 ft. S and W of NE, Sec. 24, Blk. 18, University Land ..... Cellar.

Martin A. Meyer et al's (formerly Mauch & Kroger) No. 1 Holmes, S half SW, Sec. 5, Blk. 178, T.C. Sur. ... Shut down 2,224 ft.; 5 ballers sulphur water hourly 2,215-24 ft.

Messenger et al's No. 1 Byrne, 2,130 ft. from NW line, 1,830 ft. from SW line, Sec. 54, Blk. 10, H.&G.N.R.R. Sur. ..... Drlg. 215 ft.

R. E. Moore's No. 1 Arnold, 1,320 ft. from S and 660 ft. from E lines of Sec. 18, Blk 1, H.&T.C.R.R. Sur. .... Show gas 1,780 ft.; show oil 1,88[illegible] ft.; drlg. 1,925 ft.

J. R. Miller et al's No. 1 Bennett, 359 ft. W from CWL, Sec. 1, Blk. 119, G.C.&S.F. Sur. ..... Spudded and shut down.

J. D. O'Mara's No. 1 Bennett, Sec. 592, 1,460 ft. from S, 150 ft. from E, G.&C.S.F. Sur. ..... Shut down 1,080 ft.

J. D. O'Mara's No. 1 Streety, C of Sec. 1, W. P. Howard Sur. ..... Show oil 1,785 ft.; drlg. 2,039 ft.

Peren Oil Co.'s No. 2 Eaton, C of E of W, Sec. 27, Blk. 3, H.&T.C. Sur. ..... Shut down 300 ft.

R. W. Porpus et al's No. 1 State Land, 330 ft. S and W lines of NE, Sec. 28, Blk. OW, T.C.R.R. Sur. ..... Location.

M. M. Rowan's No. 1 University, NE, Sec. 25, Blk. 16 ... Total depth 2,490 ft.; plugged back 1,815 ft.; machine moved off.

Phillips Pet. Corp.'s No. 2 Monroe, 3,860 ft. from N and 660 ft. from E, Sec. 39, Blk. 194, G.C.&S.F. ..... Cellar.

Phillips Pet. Corp.'s No. 5 Ramsey, 330 ft. from N and 1,650 ft. from W of Sec. 17, Blk. 194 ..... Show oil and gas 1,115-35 ft.; oil encountered 1,612 ft.; flowed 110 bbls.; total depth 1,705 ft.

Phillips Pet. Corp.'s No. 1 Shearer, 330 ft. from NE and SE lines of S, Sec. 99, Blk. 10, H.G.N.R.R. Sur... Drlg. 340 ft.

Rector Oil Co.'s No. 1 Young, 330 ft. S and 1,650 ft. E of SW cor., Sec. 26, Blk. 9, H.&G.N. Sur., but in Sec. 4, Blk. 3, H.&T.C. Sur. ..... Top salt 635 ft.; drlg. 1,930 ft.

Southern Crude Oil Pur. Co.'s No. 1 Eaton, 330 ft. from SE line, 1,650 ft. from SW line of Sec. 35, Blk. 3, H.T.C.R.R. Sur. ..... Fishing for tools 900 ft.; hole full water 890 ft.

Southern Crude Oil Pur. Co.'s No. 2 Tippett-A, 150 ft. from N and 165 ft. from E lines of their "A" lease, Sec. 61, Blk. 194, G.C.&S.F.R.R. Sur. ..... Top pay 365 ft.; total depth 457 ft.; 150 ft. in oil.

Shell Pet. Corp.'s No. 5 Smith-D, 990 ft. N and W of SE cor. of Sec. 24, Blk. 194, G.C.&S.F.R.R. Sur. ... Drlg. 1,030 ft.

Shell Pet. Corp.'s No. 1 University-E, 330 ft. from S and W lines of NE, Sec. 31, Blk. 16, University Land ... Shut down 935 ft.

Sides & Cloyd's No. 2 Blackstone & Slaughter, C NW of Sec. 34, Blk. A-2, T.&C.R.R. Sur. ..... Shut down 1,020 ft.

Simms Pet. Co.'s No. 1 University, 1,650 ft. N and 330 ft. W of SE cor., Sec. 21, Blk. 19, University Land ... Drlg. 1,907 ft., sand and anhydrite.

The Texas Company's No. 1 Wright, 660 ft. S and E of NW cor., Sec. 9, Blk. 131, T.&S.T.L. Sur. ..... Shut down 810 ft.

Transcontinental Oil Co.'s No. 1 University, 1,980 ft. N and E of SW cor., Sec. 18, Blk. 18, University Land.. Total depth 4,910 ft.

Transcontinental and Arkansas Fuel Oil Co.'s No. 2 Matthews, 1,060 ft. from E and 330 ft. from N line of SE, Sec. 10, Blk. 194, G.C.&S.F.R.R. Sur. ..... Top pay 1,472 ft.; shut down 1,[illegible] ft.

Transcontinental and Arkansas Fuel Oil Co.'s No. 3 Matthews (Smith), 330 ft. from S, 1,960 ft. from E of NE, Sec. 10, Blk. 194, G.C.&S.F. Sur. ..... Topped lime 1,414 ft.; shut down 1,531 ft.; top pay 1,464 ft.; flowed 40 bbls. in 24 hrs.

Transcontinental Oil Co. et al's No. 2 Sellman, 990 ft. from N and 2,310 ft. from E of Sec. 8, Blk. Z, T.C. Sur. ..... Shut down 1,752 ft.

Transcontinental Oil Co. et al's No. 3 Sellman, 330 ft. from S and E, Sec. 7, Blk. Z, T.C. Ry. Sur. ..... Location.

Transcontinental Oil Co. et al's No. 1-A Sellman, 340 ft. from N and 330 ft. from E of SE, Sec. 12, Blk. 194, G.C.&S.F. Sur. ..... Location.

Transcontinental Oil Co. et al's No. 1 Tippett, 380 ft. from S and 660 ft. from E, Sec. 8, Blk. 194, G.C. &S.F. Sur. ..... Location.

Trees Oil Co.'s No. 3 Trees, 330 ft. from S and W of Sec. 90, Blk. T, H.&G.N. Sur. ..... Fishing 1,922 ft.; show oil and gas 1,875-81 ft.

W. F. Walsh et al's No. 1 Scharbaur Cattle Co., 330 ft. S and 990 ft. E from C, Sec. 16, Blk. 136, T.&St. R.R. Sur. ..... Drlg. 325 ft.

Walsh et al's No. 1 Shearer, 330 ft. from NE and NW of E, Sec. 89, Blk. 10, H.&G.N.R.R. Sur. ..... Cellar.

**PRESIDIO COUNTY**

L. C. Brite's No. 4 Brite, 271 ft. from N and 1,188 ft. from E lines of Sec. 245, Blk. 4 ..... Shut down 570 ft.

**REAGAN COUNTY**

Big Lake Oil Co.'s No. 1-C University, 2,598 ft. S and 250 ft. W of NE cor., Sec. 1, Blk. 2, University Land.. Top pay 2,903 ft.; 1,000 ft. fluid in hole; top pay 6,807 ft.; drlg. 8,501 ft., coring black shale.

Hagan & Emeh and Amerada's No. 1 Sawyer Cattle Co., 330 ft. from S and 990 ft. from E lines of Sec. 125, Blk. 1, T.&P. Sur. ..... Drlg. 385 ft.

Big Lake Oil Co.'s No. 4-C University, 1,120 ft. from N and 1,096 ft. from E of Sec. 1, Blk. 2 ..... Showing oil and gas at 8,220 ft.; total depth 8,220 ft.; flowed 12[illegible] bbls. oil, 5,197,000 ft. gas.

Texon Oil & Land Co.'s No. 2-B University, 4,655 ft. from S, 250 ft. from W, Sec. 36, Blk. 9 ..... Drlg. 7,497 ft.

Texon Oil & Land Co.'s No. 3-B University, 2,240 ft. from S, 920 ft. from W, Sec. 36, Blk. 9 ..... Drlg. 5,541 ft.

**REEVES COUNTY**

Exploration Co.'s No. 1A. A. Kinney, 1,500 ft. W of NE cor., Sec. 26, Blk. C-18, Public School Land, elev. 2,847 ft. ..... Shut down 2,900 ft.

H. T. Hansford's No. 1 Williams, 150 ft. from S and W, Sec. 17, Blk. 6, H.&G.N. Sur. ..... Shut down 380 ft.

Black & Fink's No. 1 Brooks, 1,980 ft. N and 660 ft. W, Sec. 16, Blk. 59 ..... Shut down 1,827 ft.; show oil 1,820 ft.; 600 ft. fluid in hole.

Southern Crude Oil Pur. Co.'s No. 1 Kloh-Rumsey, 2,310 ft. N and W SE cor., Sec. 23, Blk. 51 ..... Show oil 3,410-20 ft.; shut down 3,575 ft.

David R. Thompson's No. 1 A. A. Eddins, Sec. 9, Blk. C-1 ..... Shut down 5,658 ft.

**RUNNELS COUNTY**

Gibson & Johnson's No. 1 Johnson, 2,310 ft. N and 1,650 ft. W of SE cor., Sec. 150, E.T.R.R. Sur. ..... Fishing 1,735 ft.

Gibson & Johnson's No. 2 Serratt, 2,310 ft. from S and 1,650 ft. from E of Sec. 150, E.T.R.R. Sur. ... Derrick.
George W. Boyce's No. 1 Lang, 2,310 ft. N, 6,900 ft. E, Sec. 262 ... Show oil 2,028 ft.; shut down 2,504 ft.
McLean's No. 1 Clayton, 150 ft. from N line, 270 ft. from W line of Sec. 133 ... Shut down 1,185 ft.; probably be abandoned.

**SCHLEICHER COUNTY**

Delmar Oil Co.'s No. 1 O'Harrow, C of NW, Sec. 56, Blk. 1, G.H.&S.A.R.R. Sur. ... Set 8-in. casing 2,647 ft.; hole full salt water 2,740-55 ft.; drlg. ahead 2,756 ft.
Interstate's No 1 Whitten, 1,320 ft. from N and W, Sec. 35, Blk. LL, T.C.R.R. Sur. ... Total depth 6,100 ft.; plugged back to 6,020 ft.; fishing baller.
Teas & Grant's No. 1 Allison, 1,320 ft. N and E of SW cor. of Sec. 37, Blk. K, G.H.&S.A.R.R. Sur. ... Spudding.
George Wilson's No. 1 Page, Sec. 40, Blk. L, 1,290 ft. from N, 1,470 ft. from W, G.H.&S.A.R.R. Sur. ... Drlg. 3,650 ft.

**SCURRY COUNTY**

Byrd & Harmon's No. 1 Murphy, Jr., 330 ft. from N and E of Sec. 114, Blk. 97, H.&T.C. Sur. ... Shut down 1,815 ft.; show oil 1,750 ft.
Camp Spring Oil & Ref. Co.'s No. 3 Guinn, 1,300 ft. from S. 300 ft. from E. Sec. 12, Blk. 3, H.&T.C.R.R. Sur. ... Underreaming 6⅝-in. casing; total depth 4,140 ft.
Maxwell & Lou Ladd's No. 1 Koonsman, W half, Sec. 216, Blk. 2, H.&T.C.R.R. Sur. ... Shut down 160 ft.
I. B. Mimms et al's No. 1 J. J. Koonsman, Sec. 216, Blk. 2, H.&T.C.R.R. Sur. ... Spudded and shut down 300 ft.
G. E. Dickman and R. B. Pender et al's No. 1 F. C. Davis, 1,000 ft. N and 1,770 ft. W of SE cor. of Sec. 275, Blk. 2, H.&T.C. Sur. ... Pulling 6⅝-in. casing; total depth 4,331 ft.
Magnolia Pet. Co.'s No. 1 More, 1,320 ft. from S and W, Sec. 379, Blk. 97 ... Top salt 750 ft.; encountered 500,000 ft. gas 1,510 ft.; oil show 2,215 ft.; drlg. 4,305 ft.
Transcontinental Oil Co.'s No. 1 Peckham, 330 ft. from S and W of R. N. Miller Sur. ... Fishing tools 525 ft.

**SUTTON COUNTY**

Independent Oil & Gas Co.'s No. 1 Willson, Sec. 30, Blk. A, 1,650 ft. from N, 2,310 ft. from W ... Location.

**TAYLOR COUNTY**

Condor Pet. Co.'s No. 1 Stoker, C of NW, Sec. 220, Blk. 64, H.T.C.R.R. Sur. ... Drlg. 2,432 ft.
A. H. Gibson et al's No. 1 Cody, 888 ft. N and 160 ft. W of SE cor., Lot 2, Sec. 18, Guadalupe County School Land ... Drlg. 1,930 ft.
Gibson & Johnson's No. 1 Bingham, 330 ft. N and E of SW cor. their 270.8-ac. tract, Sec. 31, Guadalupe County School Land ... Drlg. 1,470 ft.
John B. Jameson's No. 1 Webb, 1,170 ft. S and W of NE cor., Sec. 46, Lunatic Asylum Land ... Show oil 4,917 ft.; shut down 5,625 ft.
Hucony Oil Co. et al's No. 1 Richie, C SE Sec. 10, Blk. 9, S.P.R.R. Sur. ... Location.
Mid-Continent Pet. Corp.'s No. 1 Lindsey, 239 ft. N and 219 ft. E of SW cor., Subd. 22, Guadalupe County School Land ... Drlg. 850 ft.

**TERRELL COUNTY**

Big Bend Oil Co.'s No. 1 Bassett, C NW, Sec. 155, Blk. D, M.-K.-T.R.R. Sur. ... Drlg. 1,680 ft.
Keck Pecos Trust Co.'s No. 1 Hamilton, C Sec. 6, Georgetown Ry. Sur. ... Shut down 3,150 ft.
Miller Bros.' No. 1 Allison & Burke, C NW cor., Sec. 10, Blk. 176, T.&P. Sur. ... Shut down 120 ft.
Mrs. J. B. McPhee's No. 1 Sam Belt, C, Sec. 78, Blk. D-7, E.L.R.R. Sur. ... Shut down 880 ft.; moved off machine.
Transcontinental Oil Co.'s No. 1 Goode, 2,152 ft. from E and 330 ft. from S, Sec. 26, Blk. 161, G.C.&S.F.R.R. Sur. ... Fishing baller 3,030 ft.
Woodley & Jones' No. 1 Pankenham, C SE NW, Sec. 43, Blk. B-2, C.C.S.D.&N.G.R.R. Sur. ... Shut down 640 ft.

**TERRY COUNTY**

Atlantic et al's No. 1 Carlisle, 990 ft. from S and E of Sec. 58, Blk. E, E.L.&R.R. Sur. ... Drlg. 2,975 ft.
Kingsland Oil Prod. Co.'s No. 1 Brownfield, C NW SW SW, Sec. 7, Blk. 1-A, E.L.R.R. Sur. ... Fishing baller 5,080 ft.

**TOM GREEN COUNTY**

Cosden Oil Co.'s No. 1 William Anson, 2,310 ft. S, 330 ft. W of NE cor., Sec. 20, Blk. 24, H.T.C.R.R. Sur. ... Spudded.
Ellis et al's No. 1 Lewis, 450 ft. S and 150 ft. E of SE cor. of J.W. Sur. in Albert Black Sur., Sec. 75 ... Show oil 428-43 ft.; shot 20 qts 428-40 ft.; no results.
Fitzgerald & Taliaferro's No. 1 Bennett, C SW, Sec. 1,628, E. H. Ringer Sur. ... Plugged back to 2,405 ft. to straighten hole; shut down 2,447 ft.
Phillips Pet. Corp.'s No. 1 Gulden, 1,250 ft. from N and 1,583 ft. W of Sec. 77, James Webb Sur. ... Drlg. 500 ft.
E. W. Wiley et al's No. 1 Maier, 200 ft. from E, 110 ft. from N. Sec. 6, Blind Asylum Land ... Show oil 418-20 ft.; total depth 620 ft.; underreaming 6⅝-in. casing.

**UPTON COUNTY**

Cordova Union Land Co.'s No. 1 fee, 330 ft. from S and E line of Sec. 1, Blk. 1, M.-K.-T.R.R. Sur. ... Location.
Eppenauer Drlg. Co.'s No. 1 Chaney, 2,310 ft. from N and 330 ft. from W of Sec. 18, Blk. 3, M.-K.-T. Sur. ... Drlg. 1,880 ft.
Gulf Prod. Co.'s No. 3-B Hughes, 160 ft. N and 161 ft. W of most southely SE cor. of their 200-ac. lease "B" out of Wm. Teer Sur. ... Rig.
Pure Oil Co.'s No. 3 Hughes, 150 ft. S and 767 ft. E of NW of their 300 ac., Sec. 4, Wm. Teer Sur. ... Partly rigged up; shut down.
T. P. Coal & Oil Co.'s No. 1 Belcher, 1,320 ft. from N and 2,310 ft. from W line, Sec. 10, Blk. 4½, G.C.& S.F.R.R. Sur. ... Top salt 1,310 ft.; 2,200 ft. water in hole 3,755 ft.

**VAL VERDE COUNTY**

A. Bluhm's No. 1 Yoas, 1,760 ft. N, 600 ft. W of SE cor., Sec. 31, Blk. 3, I.&G.N. Sur ... Machine on ground.
Independent Operators' No. 1 Whithead, SE SE, Sec. 30, Blk. 4, I.&G.N. Sur., elev. 1,175 ft. ... Shut down 4,850 ft.
O. O. Owen's No. 1 Mills, Sec. 128, Blk. 1, I.&G.N. Sur., elev. 2,130 ft. ... Gas sand 2,491-2,520 ft.; tested 125-700 ft. gas; shut down 5,727 ft.
Phantom Oil Co.'s No. 1 Ingram, 175 ft. W of E line and 300 ft. N of S line, Sec. 33, Blk. D-8, E.L.&R.R. Sur. ... Show oil 1,525 ft.; drlg. 2,710 ft.
Calvert Oil Corp.'s No. 1 Bassett, C NE, Sec. 47, Blk. Y. ... Shut down 4,009 ft.

**WARD COUNTY**

Alpine Oil & Gas Co.'s No. 1 Dakan, 228 ft. from NE and 150 ft. from SE line, Tract 8, Sec. 11, Blk. 5, H.&T.C. Sur. ... 1,000 ft. oil in hole; top pay 2,148 ft.; total depth 2,210 ft.; shot 90 qts.; to pump.
Atlantic and Dorr's No. 1 Costley, 1,722 ft. SE of NW line and 990 ft. SW of NE line, J. W. Howe Sur. No. 2 ... Shut down 2,614 ft.; top pay 2,612 ft., making 1,000,000 ft. gas; running pipe 2,614 ft.; fluid within 500 ft. of top of hole.
Atlantic and Delmar's No. 7 Hayzlett, 1,650 ft. from NE and NW of Sec. 17, Blk. 5 ... Location.
Dearborn et al's No. 1 Boogher, 1,375 ft. NE and 785 ft. SE of N cor., Sec. 7, Blk. 32, but in Sec. 11, Blk. 5, H.&T.C.R.R. Sur. ... Drlg. 730 ft.
Gulf Prod. Co.'s N. 7 O'Brien, 320 ft. S and W, Sec. 22, Blk. F, G.M.M.B.&A. Sur. ... Hole full sulphur water 3,408 ft.; slopped over casing; total depth 3,566 ft.; plugged back to 3,025 ft.; preparing to test; swedging 8¼-in. casing 2,280 ft.
Gulf Prod. Co.'s No. 3 Wristen Bros., 220 ft. NE of SW and 220 ft. SE of NW, Sec. 18, Blk. 5, H.&T.C. Sur. ... Show gas 1,960-70 ft.; filling up with sulphur water 2,520-27 ft.; salt water 2,545 ft.; plugged back to 2,477 ft.
R. F. Owens' No. 1 Johnson, 100 ft. from NE and 1,100 ft. from SE of Sec. 8, Blk. 33, H.&T.C.R.R. Sur. ... Spudded and shut down.
Tex-Oil Prod. Co.'s No. 1 Redman, 1,980 ft. NE of SW line and 1,980 ft. SE of NW line, Sec. 152, Blk. 34, H.&T.C.R.R. Sur. ... Show gas 2,806-09 ft.; shot 30 qts. 3,245-75 ft.; shot 120 qts. from 3,240-75 ft.; drlg. 4,600 ft.
Penn and Atlantic's No. 2 Bennet, 2,310 ft. S line, 1,650 ft. W line, Sec. 16, Blk. 34, H.&T.C.R.R. Sur. ... Top pay 2,347 ft.; total depth 2,630 ft.; averaging 25 bbls. daily.
Richardson et al's No. 1 O'Brien et al, 332 ft. from N and 360 ft. from W. Sec. 5, Blk. F, G.M.M.B.&A. Sur. ... Top salt 1,230 ft.; drlg. 2,686 ft.; show oil 2,555-62 ft.; show gas 2,573 ft.; increase in oil and gas 2,585-98 ft., 2,615-31 ft., 2,660-70 ft.
Shell Pet. Corp.'s No. 1 Owens, loated NE cor. of Sec. 16, Blk. 15, H.&T.C.R.R. Sur. ... Top pay 2,886-93 ft.; increase at 2,909 ft. and 3,023-32 ft.; shot 90 quarts from 2,473-93 ft.; increase in oil 3,022-32 ft.; averaging 37 bbls. day; drlg. 4,412 ft.
Shipley et al's No. 4 Hayzlett, 2,050 ft. NW of SE and 2,420 ft. NE of SW line of Sec. 17, Blk. 5, H.&T.C. R.R. Sur. ... Top salt 720 ft.; fishing 2,950 ft.
Shipley et al's No. 5 Hayzlett, assume common line Secs. 16 and 17 is N and S, 220 ft. S and 1,910 ft. W, Sec. 17, Blk. 5 ... Standard rig.
Shipley et al's No. 1 Monroe, 330 ft. SE SW, Sec. 3, Blk. 1 ... Shut down 385 ft.
J. E. Smith's No. 1 Clement, 152 ft. SW of NE line and 153 ft. SE of NW line, Lot 7, Sec. 7, Blk. 32, H.&T.C.R.R. Sur. ... Drlg. 595 ft.
Southern Crude Oil Pur. Co.'s No. 1 Harris, 1,458 ft. from N and 1,406 ft. from E of Sec. 30, Blk. B-19 ... Drlg. ahead 2,912 ft.; ½ baller water hourly 2,795-2,800 ft.
Sturm & Paine's No. 1 Cummins, 748 ft. from NE and 155 ft. from NW of Sec. 7, Blk. 32, H.&T.C.R.R. Sur. ... Shut down 2,350 ft.; show oil and gas 2,170 ft.; made 70-bbl. head.
Sun Oil Co.'s No. 1 Sealy, 330 ft. from N and E of Sec. 88, Blk. F, G.M.M.B.&A. Sur. ... Shut down 2,555 ft.; salt water 2,445-58 ft.

**WINKLER COUNTY**

A. W. Phillips' No. 2 Brown et al, 2,000 ft. S and W of NE, Sec. 4, Blk. B-5, Public School Land ... Top salt 1,300 ft.; shut down 2,832 ft.; show oil 2,775-85 ft.
Cinderella Syndicate's No. 1 Hendricks, 330 ft. N, 1,650 ft. W, Sec. 42, Blk. 26, Public School Land ... Total depth 150 ft.; rig.
Humble Oil & Ref. Co.'s No. 3 Wahon-B, 2,310 ft. S and W of NE cor., Sec. 47, Blk. 26, School Land ... Shut down 2,647 ft.; show oil 2,631-44 ft.
Liner Drlg. Co.'s No. 1 Campbell, 330 ft. from N and E cor., Sec. 2, Blk. B-5 ... Top brown lime 2,510 ft.; shut down 3,630 ft.
Shell and The Texas Company's No. 1-B Cowden, 660 ft. from S and W of Sec. 39, Blk. B-5, Public School Land ... Drlg. 2,580 ft.; first gas 2,290 ft.; increase 2,580 ft.; total 3,500,000 ft. gas (estimated).
Shell et al's No. 8 Scarborough, 1,020 ft. from N and 1,650 ft. from E of Sec. 2, Blk. 77, Public School Land ... Location.
Sun Oil Co.'s No. 2 Sealy, 2,310 ft. N line, 330 ft. from W line, Sec. 52, Blk. F, C.M.M.B.&A. Sur. ... Shut down 3,288 ft.; hole full sulphur water 3,277 ft.

## WILDCAT OPERATIONS IN TEXAS PANHANDLE

(Continued from Page 80)

Prairie O. & G. Co.'s No. 2 Nail, 330 ft. N and W lines, N½ E½ SE, Sec. 198, Blk. 3, I.&G.N. Sur. ... 10,000,000 ft. gas 2,830-2,985 ft.; S.D. 3,123 ft.
Ryan Cons. Oil Co.'s No. 7 Block, 330 ft. N, 990 ft. W, SE cor. NE, Sec. 111, Blk. 4, I.&G.N.R.R. Sur. ... S.D. 3,062 ft.
Shamrock O. & G. Co.'s No. 1 Thompson, 330 ft. S and W lines, E 80 ac., NE, Sec. 5, Blk. 7, I.&G.N. Sur. ... Spudding.
Shell Pet. Corp.'s No. 1 Percival, 330 ft. N and E, SE, Sec. 199, Blk. 3, I.&G.N. Sur. ... S.D. 600 ft.
Skelly Oil Co.'s No. 19 Schafer, 330 ft. N, 990 ft. E, SW cor. NE, Sec. 198, Blk. 3, I.&G.N. Sur. ... 6,000,000 ft. gas 2,895-2,970 ft.; S. D. 3,100 ft. by agreement.
Skelly Oil Co.'s No. 20 Schafer, 330 ft. N, 990 ft. W, SE cor. N½, Sec. 198, Blk. 3, I.&G.N. Sur. ... S.D. 3,090 ft.
Texas Interstate P. L. Co.'s No. 1 Burnett, 1,320 ft. N, 660 ft. W, of W 480 ac., Sec. 99, Blk. 5, I.&G.N. Sur. ... Location.
Texas Lnterstate P. L. Co.'s No. 1 Sanford, C NW NE, Sec. 4, Blk. 3, A.B.&M. Sur. ... Location.
L. W. Timm's No. 2 Garnet (White Deer), 330 ft. S and W, NE cor., Sec. 104, Blk. 4, I.&G.N.R.R. Sur. ... Drlg. 1,250 ft.

**CASTRO COUNTY**

Colorado O. & R. Co.'s No. 1 Slemmons, SW cor., Sec. 73, Blk. M-17, B.S.&F. Sur. ... Rig blown down.
Mystery Oil Co.'s No. 1 J. I. Crum, SE cor. NE, Sec. 333, Blk. M-6, S.K.&K. Sur. ... S.D. 510 ft. for csg.

**CHILDRESS COUNTY**

Continental Oil Co. and Sun Oil Co.'s No. 1 Johnson, 660 ft. NE, Sec. 580, Blk. H, W.&N.W. Sur. ... Drlg. 1,960 ft.
C. L. Sloane et als' No. 1 B. P. Smith, Sec. 49, F. P. Knott lands ... T.D. 5,000 ft.; C.O.

**COCHRAN COUNTY**

Westbrook et als' No. 1 Slaughter, 400 ft. S and E, Labour 67, League 118, Knox Co. School lands ... T.D. 5,036 ft.

**COLLINGSWORTH COUNTY**

Shoupe Bros.' No. 1 Aldus, 410 ft. N, 330 ft. E, Sec. 96, Blk. 16, H.&G.N.R.R. Sur. ... Show oil and gas 1,678 ft; T.D. 2,198 ft; bailed estimate 10 bbls. first day from G.W. 2,194-98 ft.
Shoupe Bros.' No. 1 Whitson, 330 ft. N and E, SW, Sec. 33, Blk. 12, H.&G.N.R.R. Sur. ... Spudded and S.D.

**DONLEY COUNTY**

Blue Bonnett Oil Co.'s No. 1 Ball, 1,075 ft. N line, 985 ft. E line, Sec. 22, Blk. E, D.&P.R.R. Sur. ... T.D. 3,006 ft.; contract depth.
Marine Oil Co.'s No. 1 Sawyer, C SW, Sec. 5, Blk. G, G.C.&S.F. Sur. ... S.D. 4,000 ft.

**GRAY COUNTY**

Adams Oil Co.'s No. 4 Morse, 320 ft. S and W, NE cor., Sec. 3, Blk. 26, H.&G.N.R.R. Sur. ... S.D. 2,495 ft.

Baldridge & Lilley's No. 1 Melton, 330 ft. N and W. E½, SE, Sec. 95, Blk. B-2, H.&G.N.R.R. Sur. ..... Rigging up

Camel Oil Co.'s No. 2-B Harrah, 330 ft. N and E, Sec. 150, Blk. 3, I.&G.N.R.R. Sur. ..... T.D. 2,450 ft.

Cockrell-McIlroy Oil Co.'s No. 1 Castleberry, 330 ft. S and E, Sec. 126, Blk. 3, I.&G.N. Sur. ..... Drlg. 1,778 ft.

Constantine et als' No. 1 Crews, 330 ft. S and W, NE cor. SW, Sec. 20, Blk. 30, H.&G.N.R.R. Sur. ..... Shot 130 qts. 2,630-50 ft.; S.D. 2,812 ft.

Danciger Ref. and Champlin Ref. Co.'s No. 5 Cook-Faulkner, 330 ft. S, 706 ft. W, NE cor. E 120 ac., W 210 ac., Sec. 30, Blk. B-2, H.&G.N.R.R. Sur. .... Drlg. 2,500 ft.; 1,000,000 ft. gas 2,630 ft.

Danciger O. & R. Co.'s No. 5 Morse, 330 ft. N and E, SW SW NW, Sec. 1, Blk. 26, H.&G.N.R.R. Sur. .... S.D. 2,505 ft.

Danciger O. & R. Co.'s No. 1 Shaw, 330 ft. S, 286 ft. E of E 39½ ac., NW, Sec. 5, Blk. 1, A.C.H.&B. Sur. ... T.D. 2,588 ft.

Danciger O. & R. Co.'s No. 1 Williams, 330 ft. N, 330 ft. E, S½ NW ..... **Estimated 15,000,000 ft. gas 2,610-70 ft.; S.D. 2,720 ft.**

Dixon Creek Oil Co.'s No. 1 Harrah, 330 ft. ea. way NW cor. SE NE, Sec. 150, Blk. 3, I.&G.N.R.R. Sur. . T.P. 3,145 ft; T.D. 3,227 ft; 1,500 ft. oil in hole.

Dunlop's No. 4 Morse, 330 ft. N and E, SW cor. SW, Sec. 17, Blk. A-9, H.&G.N.R.R. Sur. ..... T.D. 2,431 ft.

Empire G. & F. Co.'s No. 1-B Archer, 330 ft. ea. way of SW cor. SW, Sec. 139, Blk. 3, I.&G.N. Sur. ..... Rigging up.

Empire G. & F. Co.'s No. 1 Meer-B, 330 ft. S line, 990 ft. W line, SW, Sec. 106, Blk. 3, I.&G.N.R.R. Sur. . Drlg. 1,435 ft.

Empire G. & F. Co.'s No. 1 Shields, 330 ft. ea. way out of SE cor. NE, Sec. 151, Blk. 3, I.&G.N.R.R. Sur. ..... Spudding.

Follett Pet. Corp.'s No. 1 Hood, 330 ft. S and W of W 80 ac., SW, Sec. 32, Blk. 3, H.&G.N.R.R. Sur. ..... Drlg. 1,865 ft.

Gardner Bros. and Collins' No. 2 Saunders, 955 ft. S, 330 ft. E of W 68 ac., E½, J. G. Eustice Sur. ..... Location.

Grallup et als' No. 1 Morse, 330 ft. ea. way, NE cor. SE, Sec. 3, Blk. 26, H.&G.N.R.R. Sur. ..... Drlg. 2,427 ft; 6,000,000 ft. gas 2,249 ft.

Gulf Prod. Co.'s No. 1 Bowers, 967 ft. N and E, SW cor. SE, Sec. 63, Blk. B-2, H.&G.N.R.R. Sur. ..... S.D. 2,650 ft.

Gulf Prod. Co.'s No. 2 Combs et al, 990 ft. N, 330 ft. W, SE cor., Sec. 38, Blk. 3, I.&G.N.R.R. Sur. ..... Location.

Haymer O. & G. Co.'s No. 1 Morse, 330 ft. ea way out of SE cor. E½ SE, Sec. 45, Blk. A-9, H.&G.N. Sur. . U.R. 6⅝-in. csg. 2,750 ft.

Humble O. & R. Co.'s No. 1 Combs-Worley, 330 ft. S and W, N½ SE, Sec. 36, Blk. 3, I.&G.N.R.R. Sur. . S.G. 2,340-45 ft., and 2,420 ft; T. D.2,900 ft; T.P. 2,827 ft; flowing 1,100 bbls. per day; 22,000,000 ft. gas.

Humble O. & R. Co.'s No. 2 Combs-Worley, 240 ft. W line, 330 ft. N line, N½ SE, Sec. 36, Blk. 3, I.&G. N.R.R. Sur. ..... Rigging up.

Lenix et als' No. 1 Bradford, 330 ft. N and E, W½ SE, Sec. 118, Blk. B-2, H.&G.N.R.R. Sur. ..... Drlg. 990 ft.

Lyon et als' No. 1-A Morse, 330 ft. S and W, NW NW, Sec. 1, Blk. 26, H.&G.N.R.R. Sur. ..... Rig.

Jean Pet. Co.'s No. 1 Furneaux Bros., 330 ft. N and W cor. SE, Sec. 200, Blk. B-2, H.&T.N. Sur. ..... Drlg. 400 ft.

Magnolia Pet. Co.'s No. 4 Harrah, 330 ft. ea. way, SW cor. NW, Sec. 150, Blk. 3, I.&G.N.R.R. Sur. ..... T.D. 3,250 ft; 1,700 ft. oil in hole; T.P. 3,168 ft; swbd. 56 bbls. first 5 days; pumped 42 bbls. first day.

Magnolia Pet. Co.'s No. 1 Cubine, 330 ft. N and W, NE, Sec. 36, Blk. 25, H.&G.N.R.R. Sur. ..... Drlg. 1,980 ft.

Magnolia Pet. Co.'s No. 5 Magnolia, 990 ft. N, 330 ft. E, SW cor., Sec. 14, Blk. 3, I.&G.N.R.R. Sur. ..... Rigging up.

Magnolia Pet. Co.'s No. 5 Wright, 330 ft. N, 752 ft. W, SE cor. S½ SW, Sec. 13, Blk. 3, I.&G.N.R.R. Sur. .. Swbd. 597 bbls. first 21 hrs; T.P. 2,820 ft.

McAuley et als' No. 4 Morse, 330 ft. N and W, SE cor. NE, Sec. 2, Blk. 26, H.&G.N.R.R. Sur. ..... Rig.

McIlroy Oil Co.'s No. 1 Vallmert, 330 ft. ea. way out of SE cor. NW, Sec. 140, Blk. 3, I.&G.N. Sur. ..... Rigging up.

Mid-Continent Pet. Corp.'s No. 1 Laugham, 330 ft. S and W, W 231½ ac., N 310½ ac., Sec. 1, Blk. B-2, H.&G.N. Sur. ..... Drlg. 1,975 ft.

Operators Royalty Co.'s No. 1 Eddington, 330 ft. ea. way, NE cor. NW, Sec. 34, Blk. B-2, H.&G.N.R.R. Sur. ..... S.G. 2,655-93 ft; T.P. 2,937 ft; T. D. 3,023 ft; spraying 30 bbls. per day.

Oil Operators' No. 1 Bowers, 330 ft. N, 330 ft. E, Sec. 93, Blk. B-2, H.&G.N. Sur. ..... Show oil and gas 2,400-17 ft.; S.O. 3,036-55 ft.; first gas 2,483 ft. increase at 2,500 ft., 2,544 ft. and 2,950 ft.; S.D. 3,090 ft.

Panhandle Ref. Co.'s No. 4 Saunders, 990 ft. N and 330 ft. E, SW cor. E½ NE, Sec. 3, Blk. 1, A.C. H.&B. Sur. ..... Drlg. 1,959 ft.

Prairie O. & G. Co.'s No. 2 Laugham, 330 ft. S and E, NW cor., W 230.3 ac., of S 310.5 ac., Sec. 1, Blk. B-2, H.&G.N. Sur. ..... Drlg. 1,720 ft.

Prairie O. & G. Co.'s No. 1 Worley, 330 ft. ea. way out of NW cor. NW, Sec. 36, Blk. 3, I.&G.N.R.R. Sur. .. Spudding.

Prairie O. & G. Co.'s No. 2 Worley, 330 ft. ea. way out of NE cor. NW, Sec. 36, Blk. 3, I.&G.N. Sur. ..... S.D. 363 ft.

Prairie O. & G. Co.'s No. 3 Worley, 330 ft. ea. way out of SE cor. NW, Sec. 36, Blk. 3, I.&G.N.R.R. Sur. .. Rigging up.

Phillips Pet. Co.'s No. 1 Wright-Wood, 330 ft. N, 990 ft. E, SW cor. N½ SW, Sec. 13, Blk. 3, I.&G.N.R. R. Sur. ..... S.D. 2,692 ft; S.G. 2,477 ft.

Phillips Pet. Co.'s No. 2 Wright-Wood, 330 ft. N, 990 ft. W, SE cor. N½ SW, Sec. 13, Blk. 3, I.&G.N. Sur. . Coring 2,600 ft; S.G. 2,425 ft.

Phillips Pet. Co.'s No. 1 Combs-Worley (J. Fox), 330 ft. ea. way out of NW cor. NE, Sec. 36, Blk. 3, I.&G.N.R.R. Sur. ..... Drlg. 2,100 ft.

Prairie O. & G. Co.'s No. 1 Worley et al, 330 ft. ea. way out of NW cor. NW, Sec. 36, Blk. 3, I.&G.N.R.R. Sur. ..... Drlg. 2,100 ft.

Prairie O. & G. Co.'s No. 2 Worley et al, 330 ft. ea. way out of NE cor. NW, Sec. 36, Blk. 3, I.&G.N. R.R. Sur. ..... Drlg. 1,800 ft.

Reynolds et als' No. 1 Webb, 330 ft. N, 380 ft. E, NW, Sec. 60, Blk. 25, H.&G.N.R.R. Sur. ..... Drlg. 1,940 ft.

Rieger & Steckoll's No. 1 Bohr, 330 ft. S and E, Sec. 37, Blk. B-3, H.&G.N. Sur. ..... S.D. 3,509 ft.

St. Clair Oil Co.'s No. 1 L. S. Stockton, SE cor., Sec. 35, W. R. Lee Sur. ..... Spudded and S.D.

Stover and Shell's No. 1 Saunders, 990 ft. N 330 ft. E, N 100 ac. of W 149 ac., Sec. 3, B.&B. Sur. ..... 2,000,000 ft. gas 2,670-75 ft; T.D. 2,956 ft; shot 60 qts; no results; C.O.

Sun Oil Co.'s No. 1 Combs-Worley, 330 ft. ea. way, SW cor. SE, Sec. 35, Blk. 3, I.&G.N. Sur. ..... Drlg. 2,229 ft; S.G. 2,175 ft.

The Texas Co.'s No. 1 Bell, 2,310 ft. N, 2,640 ft. W, Sec. 133, Blk. B-2, H.&G.N.R.R. Sur. ..... 1,500,000 ft. gas 2,800-2,910 ft. drlg. 3,625 ft; P.B. 2,960 ft; shot 160 qts. 2,800-2,960 ft; C.O.

The Texas Co.'s No. 15 Saunders, 330 ft. N and W, SE cor. W½ SE, Sec. 4, Blk. 1, A.C.H.&B. Sur. ..... S.D. 2,610 ft.

The Texas Co.'s No. 1 Wright, 330 ft. S and W, SE, Sec. 13, Blk. 3, I.&G.N.R.R. Sur. ..... Drlg. 2,642 ft.

Travis & Reiger's No. 1 Mackie, 330 ft. N and E, Sec. 114, Blk. B-2, H.&G.N.R.R. Sur. ..... 16,000,000 ft. gas; T.P. 2,685 ft.; S.D. 3,343 ft.

Vulcan O. & G. Co.'s No. 1 Carpenter, 330 ft. N and W, W 80 ac., NW, Sec. 25, Blk. 25, H.&G.N.R.R. Sur. ..... S.D. 1,620 ft.

Wilcox-Pampa Oil Co.'s No. 13 Combs-Worley, 330 ft. ea. way out of NE cor. E½, Sec. 37, Blk. 3, I.&G. N. Sur. ..... Drlg. 2,383 ft.

Wilson et als' No. 1 Heaston, 330 ft. S and W, Sec. 160, Blk. B-2, H.&G.N.R.R. Sur. ..... S.D. 1,025 ft.

Wright Wilson, trustee's No. 1 Chapman, 175 ft. S and E lines, N½ NW, Sec. 69, Blk. 25, H.&G.N. Sur. .... S.O. 2,685 ft.; S.D. 2,693 ft.

**HARTLEY COUNTY**

Dana O. & G. Co.'s No. 1 Fritz, C NE, Sec. 81, Blk. 44, H.&T.C.R.R. Sur. ..... Drlg. 3,134 ft.

**HUTCHINSON COUNTY**

Alamosa Oil Co.'s No. 4 Sanford, 310 ft. S, 320 ft. W, NE cor. N 160 ac., S 240 ac., Sec. 85, Blk. 46, H. &T.C. Sur. ..... S.O. and wtr. 3,010-11 ft; S.D. 3,095 ft.

Alexander et als' No. 1 Johnson, 1,709 ft. E, 330 ft. N, N 80 ac., E½, E. T. Tomlinson Sur. ..... Drlg. 2,370 ft.

Continental Oil Co.'s No. 1 Johnson-E, 330 ft. N and E, SW cor. SE, Sec. 5, Blk. I, B.&B. Sur. ..... Drlg. 2,755 ft.

Danciger O. & R. Co.'s No. 1 Cheatham, 330 ft. N and E, SW SE, Sec. 38, Blk. Y, A.&B. Sur. ..... Drlg. 2,000 ft.

Danciger O. & R. Co.'s No. 3 Moore, 330 ft. S and E, NW W½ SE, Sec. 125, Blk. 4, I.&G.N.R.R. Sur. .... 1,000 ft. oil in hole; T.P. 3,003-39 ft; S.D. 3,030 ft.

Danciger O. & G. Co.'s No. 4 Moore, 330 ft. N and E, SW cor. W½ SE, Sec. 125, Blk. 4, I.&G.N.R.R. Sur. . Rigging up standard tools; T.D. 2,825 ft.

Dixon Creek Oil Co.'s No. 1 Cheatham, 990 ft. E, 330 ft. S, N½ SE, Sec. 38, Blk. Y ..... Drlg. 2,740 ft.

Dixon Creek Oil Co.'s No. 2 Cheatham, 330 ft. N, 1,650 ft. W, SE cor. N½ SE, Sec. 38, Blk. Y ..... Set 10-in. csg. 2,020 ft.

Dixon Creek Oil Co.'s No. 1 Johnson Bros., 50 ft. S, 330 ft. W, NE cor. E 80 ac., J. Gammon Sur. ..... Drlg. 2,448 ft.

Gulf Prod. Co.'s No. 1 W. E. Herring, 1,320 ft. N, 1,395 ft. E, SW cor., Sec. 5, Blk. J, H.&G.N. Sur. .... S.D. 2,650 ft.

Gulf Prod. Co.'s No. 1 Herring-A, 990 ft. S, 990 ft. W, NE cor., George Bazon Sur. ..... S.D. 2,668 ft.

Huey et als' No. 3 Smith et al, 330 ft. N, 660 ft. W, S 40 ac., E 100 ac., SE, Sec. 12, Blk. Y ..... Drlg. by tools 2,702 ft.

Midwest Explin. Co.'s No. 1-B Garner et al, 330 ft. N, 990 ft. W, Sec. 124, Blk. 4, I.&G.N.R.R. Sur. .... Rigging up.

Phillips Pet. Co.'s No. 2 Cheatham, 330 ft. S and E, NW cor. SE SE, Sec. 38, Blk. Y ..... Drlg. 2,675 ft.

Phillips Pet. Co.'s No. 1 Johnson-Burl, 330 ft. S and W, NE cor. W 240 ac., N 320 ac., Sec. 4, Blk. 1, B.&B. Sur. ..... Drlg. 2,310 ft.

Phillips Pet. Co.'s No. 1 Johnson-Juanita, 330 ft. N and W, SE cor. W½, Sec. 5, Blk. I, B.&B. Sur. .... Drlg. 2,850 ft.

Phillips Pet. Co.'s No. 1 Johnson-Trammel, 930 ft. N, 330 ft. W, SE cor. W½ NW, Sec. 38, Blk. Y ..... Drlg. 2,685 ft.

Phillips Pet. Co.'s No. 1 Johnson-Mayer, 990 ft. N and 990 ft. W line, NE, Sec. 37, Blk. Y, A.&B. Sur. ..... Drlg. 2,655 ft.

Phillips Pet. Co.'s No. 1 Johnson-Royal, 330 ft. S and E, NW cor. E½ NW, Sec. 34, Blk. Y ..... U.R. 10-in. csg. 2,550 ft.

Phillips Pet. Co.'s No. 1 Johnson-Rudy, 330 ft. W, 330 ft. S, SW SW, Sec. 30, Blk. Y, A.&B. Sur. ..... Drlg. 2,155 ft.

Phillips Pet. Co.'s No. 1 Vake (Hazel), 330 ft. N and W, Sec. 4, Blk XO2, H.O.&B. Sur. ..... Location.

Skelly Oil Co.'s No. 1 Byrd, 2,640 ft. E line, 3,960 ft. S line, W 3,094 ac., D. Luce Sur. ..... T.D. 3,410 ft; to complete as gasser.

Spurlock et als' No. 1-A Christian, 440 ft. S, 330 ft. W, NE cor. SE SE, Sec. 33, Blk. Y ..... S.D. 1,775 ft.

Sulock Oil Co.'s No. 1 Bost, 990 ft. S, 330 ft. E, SW, Sec. 1, B.S.&S.F. Sur. ..... Location.

The Texas Co.'s No. 5 Moore, 330 ft. N and W, SE cor. SW, Sec. 125, Blk. 4, I.&G.N.R.R. Sur. ..... Drlg. 2,205 ft.

Texarado Oil Co.'s No. 2 Sanford, 330 ft. S, 990 ft. W, NE cor. N 80 ac., S 160 ac., Sec. 83, Blk. 46, H.& T.C.R.R. Sur. ..... Drlg. 2,400 ft.

**LAMB COUNTY**

Graham O. & G. Co. et als' No. 1 Ellwood, CWL, Sec. 9, Blk. T, T. A. Thompson Sur. ..... S.D. 4,408 ft.

**LIPSCOMB COUNTY**

Brown et als' No. 1 Box T Ranch, SW NE, Sec. 612, H.&T.C. Sur. ..... S.D. 3,770 ft; S.G. 3,760 ft.

Okla. Public Service Co.'s No. 1 C. W. Jones, NE SW, Sec. 100, H.&T.C. Sur. ..... Fishing 4,954 ft.

**LUBBOCK COUNTY**

Center Oil Co.'s No. 1 Bowles Ranch ..... Small S.O. 1,133-40 ft; S.D. 4,167 ft.

**MOORE COUNTY**

Canadian River Gas Co.'s No. 1-C Sneed, 660 ft. N and E, SW, Sec. 46, Blk. 6-T, T.&N.O.R.R. Sur. ..... S.D. 2,500 ft.

Fritch O. & G. Co.'s No. 1 Lee Bivins, C N 40 ac., N 160 ac., Sec. 4, Geo. Mahan Sur. ..... 2,000,000 ft. gas 1,550-65 ft; T.D. 3,212 ft; S.O. 3,188 ft; shot 40 qts. from 3,182-3,202 ft; no results; S.D.

Gulf Prod. Co.'s No. 1 Kilgore, C SW, Sec. 22, Blk. P.Mc., E.L.R.R. Sur. ..... Red rock; 60,000,000 ft. gas; S.D. 2,815 ft.

Operators Royalty Co. et als' No. 1 Jones, 330 ft. S line, 330 ft. E line, SW SW, Sec. 164, Blk. 3-B, T.&N.O.R.R. Sur. ..... Drlg. 3,270 ft.

Red River Gas Co.'s No. 1 J. M. Shelton, 330 ft. ea. way from SE cor., Sec. 52, Blk. 3, G.&M. Sur. ..... S.D. 3,080 ft.

**MOTLEY COUNTY**

Explin. Co.'s No. f Matador, 330 ft. N line, 330 ft. E line, Sec. 132, Blk. M ..... S.D. 4,011 ft.

Matador Oil Corp.'s No. 1 Owens, C NE, Sec. 10, Blk. G. B.&B. Sur. ..... S.D. 580 ft.

**POTTER COUNTY**

Canadian River Gas Co.'s No. 1-N Masterson, 330 ft. E. 1,320 ft. S, Sec. 17, Blk. 3, G.&M.R.R. Sur. ..... Set 8-in. csg. 1,980 ft.

**RANDALL COUNTY**

W. A. Patterson's No. 1 Palo Duro, Sec. 60, Blk. K-14. S.D. 1,250 ft.

Texas Interstate P. L. Co.'s No. 1 Masterson, C, Sec. 37, Blk. B-10, E.L.R.R. Sur. ..... Location.

**ROBERTS COUNTY**

Big Bend Oil Co.'s No. 1 Ledrick, Sec. 7, Blk. A-5 ..... Shot 10 qts. 5,270-93 ft; S.O. 5,288 ft; S.D. 5,992 ft.

**WHEELER COUNTY**

Dunaway Bros.' No. 1 Worley, 330 ft. S and W, NE cor. NW, Sec. 39, Blk. 24, H.&G.N.R.R. Sur. ..... T.D. 2,120 ft; 2,000,000 ft. gas 2,615-20 ft.

Four Leaf Drlg. Co.'s No. 1 Jackson, 330 ft. S and W, NE, Sec. 11, Blk. 27, H.&G.N. Sur. ..... Location.

Lone Star Gas Co.'s No. 1 Brown, C NW NE, Sec. 53, Blk. 23, H.&G.N.R.R. Sur. ..... Location.

Lone Star Gas Co.'s No. 1 Fuller, C SW NE, Sec. 71, Blk. 17, H.&G.N.R.R. Sur. ..... Drlg. 1,475 ft.

Lone Star Gas Co.'s No. 2 Hicks (Martin), C NW NE, Sec. 52, Blk. 17, H.&G.N.R.R. Sur. ..... Location.

Lone Star Gas Co.'s No. 1 Nickell, C NW NW, Sec. 64, Blk. 17, H.&G.N.R.R. Sur. ..... Location.

Lone Star Gas Co.'s No. 1 Wofford, C SE SW, Sec. 68, Blk. 17, H.&T.N.R.R. Sur. ..... Spudding.

Lone Star Gas Co.'s No. 1 Ridinger, C NW NW, Sec. 65, Blk. 17, H.&G.N. Sur. ..... Rig on ground.

Prince & Adams' No. 2 Burcham, C NE NE, Sec. 89, Blk. 17, H.&G.N.R.R. Sur. ..... Drlg. 720 ft.

Wischkamper et als' No. 2 Brown, C SE NE, Sec. 53, Blk. 23, H.&G.N.R.R. Sur. ..... S.D. 1,200 ft.

## CENTRAL WEST FIELDS

(Continued from Page 76)

both the Princeton Field and in the southern part of the state. In the old Trenton Rock area Rosenthal and others drilled a dry hole in No. 2 on the Ballenbacker Heirs, Section 34, Blue Creek Township, Adams County.

In the Princeton Field or the southwestern part of the state, the Texana Oil Co.'s No. 3 in the southwest corner of the Samuel Mitchell farm, SE, Section 32, Center Township, Gibson County, produced 600,000 feet of gas found between 1,690-99 feet. Mann & Hauber are drilling on the Tom Duncan farm, Section 13, Washington Township, same county, and the Texana Oil Co. is drilling No. 2 S. McCollough, Section 10, Barton Township.

Mahutska Oil Co. and others are drilling a second test on the Jess Lindy farm, Survey No. 9, Clay Township, Pike County.

The Ohio Oil Co. has a rig in for No. 3 on the Cash Piety farm, Section 32, Prairie Creek Township, Vigo County, in the Siosi Pool.

### ILLINOIS

The Dupo Field in Sugar Loaf Township, St. Clair County, takes the lead in development work over the Illinois areas and attempts are being made to widen out from the town lot development which has been going on there for close to two years. In this field Gorman and others' No. 3 well, 166 feet from the north line and 1,594 feet from the east line of the A. Thielman farm, SW, Section 34, Sugar Loaf Township, produced an initial of 130 bbls. from 702-744 feet. Dickman and others' test, 1,520 feet from the north line and 990 feet from the east line of the F. L. Boltz, SW SW, Section 12, was dry at 1,129 feet. W. S. Avery found one of the same kind 1,150 feet from the south line and 990 feet from the west line of the W. Kleinschmidt farm, NE SE, Section 36, at a total depth of 1,190 feet. Joseph Mays also drilled a dry hole on the John Luton farm, Section 17, Sugar Creek Township.

Porterville Oil Co.'s second test, 900 feet from the north line and 200 feet from the east line of the J. Akerman, SE, Section 35, Prairie Township, Crawford County, produced but 1 bbl. at a depth of 980 feet.

Charles Blosser and others are drilling on the Margaret Seigle farm, Section 18, Dennison Township, Lawrence County.

Foreman & Miller are drilling on the A. Schaffer farm, in Wabash Township, Wabash County, in the Allendale Field, and the Max Oil Co. is drilling No. 10 on the Holson-Dorney, Section 18, same township. Arkansas Fuel Oil Co. abandoned Nos. 8 and 9 Della V. Wright, Section 8, same township.

Hall and others are drilling on the Ferdinand Keller, Section 7, Collinsville Township, Madison County.

In Monroe County, in the western part of the state, Madrill and others drilled a dry hole in the northeast corner of the Charles F. Fehr, in Location 36, at a depth from 1,805-25 feet. Phillips Petroleum Co. got one of the same kind on the Columbia Quarry No. 1, Section 14, Columbia Township, at from 617-657 feet. A. R. A. Production Co. is drilling on the Barthel Schlegel land, Location 30, same county.

## KENTUCKY-TENNESSEE

(Continued from Page 76)

from the north line and 400 feet from the east line of the W. B. Kelley 105 acres, produced 50 bbls. initially.

James C. Ellis drilled in his No. 7 on the W. P. Howard farm, 3 miles southeast of Whitesville, the well doing an initial of 70 bbls.

Doctor Sirman's No. 24 on the Nancy Farmer 87½ acres, in the Friendship Church Pool, produced 20 bbls. the first 24 hours, and No. 25 is reported under way.

Louisville Gas & Electric Co.'s No. 1 on the Knott land, in the Haynesville area, is reported at 10 bbls.

Chester Claypool and others' No. 16 on the J. L. and J. H. Ralph 123 acres, in the Ralph Pool, is reported a duster.

Creek Drilling Co. and others found a dry hole on the Louisville Joint Stock Co. land and Boop & McDonough found one of the same kind in the southeast corner of the J. H. Milligan 108 acres.

### Bowling Green Field

In the Bowling Green Field of Warren County, J. H. Wright's No. 12 in the northeast corner of the Hobson Heirs farm, west of Bowling Green, produced but 1 bbl. at a depth of 990 feet.

Schriber and others' test, 70 feet from the north line and 500 feet from the east line of the S. B. Blewett farm, south of Bowling Green, was dry at 520 feet.

### Daviess County

A remarkably fine producer was found 800 feet from the south line and 200 feet from the west line of the Frank Fuqua 71 acres, in the Jones Pool, southwest of Whitesville, in Daviess County, which was No. 2 on the lease, the well producing 100 bbls. the first 24 hours from the Jones sand.

Smith, Randolph and others' test on the Edward Bennett farm, in the Utica Field, was dry at 1,655 feet after passing through the McCloskey sand.

Watts & Vickers are drilling on the M. Iglehart farm, southeast of the Burton Pool. Unknown parties are working on the H. Asher farm. Ben T. Wright and others are drilling No. 4 on the Goldie Ambrose west 23 acres, in the Cane Run area. Hupp & French are drilling No. 2 W. L. Ware farm, same area. Eastern Gulf Oil Co. is drilling No. 3 on the Rose B. Tyler 75 acres, in the Red Hill area. In the Burton Pool, C. E. Daugherty is drilling No. 3 W. L. Taylor and Onsel Brothers and others are drilling No. 3 on the west end of the W. L. Taylor 122 acres.

Reports are that the Creek Drilling Co. paid $12,500 for a lease on the W. C. Cooper 96 acres, in the Niagara Field of Henderson County.

## CHANGES MADE IN THE PRODUCTION DIVISION

LOS ANGELES, Calif., Apr. 5.—Two important changes were made in the organization of the production division of the American Petroleum Institute at the two-day conference held here. Three vice chairman were elected to assist the new chairman, A. H. Bell, general superintendent of the Continental Oil Co., and an advisory committee of 15 was also elected to promote the growing activities of the Institute.

The three vice chairmen are: V. H. Wilhelm, chief production engineer of The Texas Company, for the Los Angeles Basin; A. H. Cranson, Honolulu Consolidated Oil Co., for the Ventura district; and A. L. Tietze, assistant general superintendent of northern California district, Standard Oil Co., for San Joaquin Valley.

M. E. Lombardi, Standard Oil Co., is the chairman of the advisory committee, which also includes J. H. Jenkins, Associated Oil Co.; Fred Fortine, Barnsdall Oil Co.; W. L. McLaine, General Petroleum Corp.; E. T. Jergins, Jergins Syndicate; H. R. McMillan, McMillan Petroleum Co.; W. E. Dunlap, Richfield Oil Co.; J. U. Stair, Shell Oil Co.; J. Bermingham, The Texas Company; F. F. Hill, Union Oil Co.; R. E. Collom, Continental Oil Co;. R. R. Templeton, Pacific Western Oil Co.; S. B. Mosher, Signal Oil & Gas Co.; William Keck, Superior Oil Co.; and H. F. Owens, Ethel D. Corp.

## DRILL NEAR STRANGE, TEX.

HOUSTON, Tex., Apr. 7.—With H. C. Cockburn, Carl R. Haas and George Lawrence as incorporators, the Strange Petroleum Corp. has been organized here with a capitalization of $100,000. Mr. Cockburn is president. The company will have as its immediate purposes the development of some holdings on a torsion balance prospect near Strange, checked during 1928 by the North American Exploration Co., with which Mr. Cockburn is affiliated.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**BUFFALO GASOLENE MOTOR COMPANY**
**Buffalo, New York**

# WILDCAT OPERATIONS IN SOUTHWEST TEXAS

(Continued from Page 67)

**CALDWELL COUNTY**

W. E. Allaun and Calco Pet. Co.'s No. 1 Martin.....T. D. 2,920 ft.; preparing to shoot.
Keen & Malcolm's No. 1 Mollie McNeal, George C. Kimball Sur., 2,500 ft. to W line, 860 ft. to N line, 1 mile S from old Luling Field .....T. D. 2,190 ft.; tested; bailed mud.
Herb. Morgan's No. 1 O. Perry, 2,600 ft. S line, 3,850 ft. W line of survey in the John D. Ranes Sur., 2 miles NE from Bruner Pool .....T. D. 1,835 ft.; drlg. in shale.
S. H. Cargill's No. 1 B. Lynch, 150 ft. from S and E lines 50-ac. tract, in the B. Benton Sur.....T. D. 1,240 ft.; shut down; water in hole.
G. R. McIntire's No. 1 J. G. Towns, in the I. Weldon Sur., 4,900 ft. to NE line, 1,350 ft. to SE line of Sur..T. D. 2,630 ft. in chalk; shut down.
Trinity Drillers' No. 1 McMullen, 2,125 ft. from NE line, 150 ft. from NW line of Sur., Gibson Betty Sur.....T. D. 2,135 ft.; drlg. in shale.

**DEWITT COUNTY**

Gibson & McIntyre's No. 1 William Van Roeder.....T. D. 1,480 ft.; shut down.
Republic Prod. Co.-Simms Pet. Corp.'s No. 1 E. T. Clark 778-ac., 1,450 ft. from SE line, 7,500 ft. from SW line of tract in the Jose Santos, 4 miles S from Yorktown .....Rigging up.
H. T. Roe's No. 1 Leinhardt .....T. D. 1,800 ft.; working over machinery to start up.

**DUVAL COUNTY**

T. W. Callahan and W. M. Howard's No. 1 J. M. Luby, 3,960 ft. N line, 3,960 ft. W line Sur. 24 .....Moving on.
National Oil Co.'s No. 2 Ball, Agua Poquita Sur., Blk. 3..T. D. 3,635 ft.; drlg.
Southern Crude O. P. Co.'s No. 1 John Dinn, 3,450 ft. S line, 119 ft. W line of Sur. 480 .....Rigging up.
Southern Oil Co.'s No. 1 Welder Wood, Sur. 215.....T. D. 750 ft.; standing waiting on water.

**EDWARDS COUNTY**

Phillips Pet. Corp.'s No. 2 A. G. Holman, 330 ft. from N and E lines of SE of tract, C.C.S.D.&N.G.R.G. Sur. No. 25 .....Location.
Griffith's No. 1 Wardlaw, 150 ft. from S line, 1,505 ft. from Sec. 60, Blk. US, J. J. Clift Sur. .....T. D. 3,000 ft.; shut down, contract depth.

**FRIO COUNTY**

Frank B. LeFeure's No. 1 H. W. and R. L. Eschenburg, Edward Galligher Sur. No. 789, 3,980 ft. W of SE cor. of Edward Galligher Sur. No. 788 and 1,320 ft. S of N line of Edward Galligher Sur. No. 789.....T. D. 2,845 ft.; drlg. in chalk.
Walton & North's No. 1 Trebble, 150 ft. N line, 150 ft. E line, Sec. 64, in the Henry Castro Sur. .....T. D. 1,940 ft.; drlg. in shale.

**FAYETTE COUNTY**

Kelly et al's No. 1 E. M. Burke, in the C. J. A. Weaver Sur. .....T. D. 488 ft.; shut down.
Moore et al's No. 1 Kerr, 250 varas S of CNL of M. Muldoon lease .....T. D. 2,485 ft.; shut down.
Muldoon Oil Co.'s No. 1 J. A. Kerr, 2,900 ft. from S, 3,250 ft. from W of M. Muldoon Sur., 2 miles W of Muldoon .....T. D. 2,320 ft.; drlg. in sandy shale.

**GOLIAD COUNTY**

Wm. F. Morgan's No. 1 George Ray, in Pedro Trevano Sur., 150 ft. from SE and NW line of George Ray 627-ac. tract .....T. D. 4,515 ft.; testing sand at 4,430 ft.
Humble Oil & Ref. Co.'s No. 1 Lackey & Weldon, 2,000 ft. from SE and SW lines of the Lackey & Weldon 1,000-ac. tract out of the most SW cor. thereof, in the Javiano Gomez Sur. .....T. D. 1,042 ft.; drlg. in sandy shale.

**GONZALES COUNTY**

Acme Oil & Royalty Corp.'s No. 1 Weber, Thomas Wright Sur. .....T. D. 2,350 ft.; coring sandy shale.
Fitzsimmons & Perrinot's No. 1 Z. Huber, 2,100 varas from NW line, 1,450 varas from NE line (river) of survey, 2¾ miles SE of Darst Creek, in Stephen Smith Sur. .....T. D. 2,565 ft.; shut down; working on rig.
Atlbus et al's No. 1 C. Martin, 268 ft. from N line, 2,650 ft. W line 210-ac. tract in the M. A. Williams Sur. .....T. D. 950 ft.; drlg. in sticky shale.
Alice R. Garrett's No. 1 W. H. Cardwell, 150 ft. from SW line, 1,650 ft. from SE line of Sur., 12 miles S from Gonzales, in the Byrd Lockhart Sur. .....Spudded and shut down.
United North & South Dev. Co.'s No. 2 J. A. Kerr, 1,150 ft. S line, 750 ft. W line of tract in the A. K. Clark Sur. .....T. D. 2,487 ft.; setting 10-in. csg.
Finnell & Elam's No. 1 J. F. Robinson, 2,000 ft. N line, 4,420 ft. E line, in the J. H. Livergood, 2½ miles NE from Waelder .....T. D. 860 ft.; drlg. in sandy shale.

**GUADALUPE COUNTY**

Turman et al's No. 1 St. Charles, 150 ft. N line, 300 ft. from W line of Sur., 5 miles SW of Grayburg's No. 1 Wells, SE cor. of county, in the J. A. Miller Sur...T. D. 4,010 ft.; dry and abandoned.
Grayburg Oil Co.'s No. 2 Wells, 5,730 ft. E line, 2,490 ft. S line of NE cor. of Wells tract in the James D. Baume Sur., 6 miles SW from Darst Creek .....Laying water line.
Suttle et al's No. 1 A. Baenziger, 150 ft. from SE cor. of 125-ac. tract in the A. O. Mansola Sur., 5 miles S from Seguin .....T. D. 250 ft.; drlg. in hard rock.
Tidal Oil Co.'s No. 1 J. Seiligman, 150 ft. from N and E lines of the J. Seiligman 40-ac. NW cor. of J. H. Williamson Sur., 15 miles S from Seguin ....Rigging up.
Trinity Drillers' No. 1 J. M. White, 975 ft. from NE line, 750 ft. from SE line of 166-ac. farm, in the Mich Miller Sur. .....Rigging up.

**JIM WELLS COUNTY**

R. W. Ogden's No. 1 G. Farris, M. Perez Sur.....T. D. 2,615 ft.; shut down.

**KARNES COUNTY**

Ruby & Claypool's No. 1 Tom V. Zepeda Sur., 850 ft. N line, 1,600 ft. E line .....T. D. 2,838 ft.; drlg.; top of Jackson 2,129 ft.
Hewitt et al's No. 1 H. N. Matula, 450 ft. from E and center of NW and SE lines of 125-ac. farm, in the Victor Blanco Sur. .....Spudded in and shut down.
Mundine Investment Co.'s No. 1 A. D. Wilburn, C of 143 ac. in H. K. Hardy Sur., 3 miles SE from Dunge..Location.
Hewitt et al's No. 1 W. E. Porter .....T. D. 3,650 ft.; drlg.

**KENDALL COUNTY**

Borgett et al's No. 1 Haag, W. Avery Sur. .....T. D. 700 ft.; tools stuck; pulling csg.
Sitten et al's No. 1 Garvin, C of NE of D. L. Richardson Sur. in the D. L. Richardson Sur., 1 mile NE from Kendalia .....T. D. 95 ft.; drlg. in broken lime.
Seaboard Oil & Gas Co.'s No. 1 W. Asken, SW cor. of Sur. in the Miguel die Toro Sur., 3 miles N from Sisterdale .....T. D. 450 ft.; drlg. in black shale and lime; set 400 ft. 10-in. csg.
Dixon Oil Co.'s No. 1 Ottmer Behr, W of H.T.&B.R.R. Sur., 3½ miles SE from Sisterdale .....T. D. 575 ft.; drlg. in limy formation.
Sterling's No. 1 Willie Werner, 2 miles NW from Borgett's No. 1 Haag .....T. D. 914 ft.; shut down; pump installed.

**KERR COUNTY**

Mashe & Tunstill's No. 1 Love Ranch, 1,000 ft. from W line of Sec. 1,594, 100 ft. S of S line of Sec. 1,597, in the G.C.S.D.&R.G.N.G. Sur. .....Moving in.

**KLEBERG COUNTY**

Bowen-Sarles' No. 1 Robert H. Simmons, Sec. 7, King Subd., 3 miles W from Ricardo .....T. D. 415 ft.; standing.

**KINNEY COUNTY**

Lloyd Oil Co.'s No. 1 G. B. Moore, Sur. 117 .....T. D. 3,000 ft.; producing sulphur water.
Magnolia Petroleum Co.'s No. 1, SE cor. of Baldz Sur., near S.P.R.R., close to Blume test on Wardlow ranch, W part of county, 2½ miles from Blume.....Moving in tools.
A. Blume et al's No. 2 Herbst, 1,731 ft. W and S lines of Sur., in the Poindexter-Burns Sur. .....Spudded in.
Mardon Oil Co.'s No. 2 Jim Clamp, in the John Winter Sur. No. 346, Near No. 1 .....T. D. 498 ft.; shut down in chalk.

**LASALLE COUNTY**

Salt Lake City Pet. Co.'s No. 1 Beckwith, Sur. 17, 150 ft. S line, 150 ft. E line .....T. D. 2,760 ft.; standing.

**LAVACA COUNTY**

McElreath & Suggett's No. 1 Julius Heinshohn, 361 ft. to E, 523 ft. to S line of farm, in the G.W.&W.H. Sur. .....Spudded in.

**LEE COUNTY**

Byrd et al's No. 1 H. L. Bastle, 1,200 ft. N and 1,000 ft. E of 80-ac. tract of Wm. Johnson .....T. D. 3,612 ft.; shut down; hole full of water.
Texas-Louisiana Carbon Corp.'s No. 1 Bryan, in the S. F. Austin Sur., 1,200 ft. N and W of 1,300-ac. farm..T. D. 3,380 ft.; drill stem stuck.
Todor Oil Corp.'s No. 1 H. Zoesch, in the J. Meeks Sur., 150 ft. N and 900 ft. W of S. Meeks Sur. .....T. D. 2,000 ft.; shut down.

**LIVE OAK COUNTY**

O'Neil & Catlett's No. 1 Smith, 900 ft. SW line, 150 ft. NW line .....T. D. 4,512 ft.; standing; prep. to deepen.
Simmons Oil Co.'s No. 1 Richard Coquat, in James C. Hill Sur., 2,250 ft. to S line, 1,750 ft. to E line, 7 miles NE of Oakville .....T. D. 4,012 ft.; shut down; awaiting orders.

**MAVERICK COUNTY**

Rycade Oil Corp.'s No. 6 Chittim, 1,455 ft. from S, 320 ft. from W of Sec. 116, Blk. 7, I.&G.N. Sur.....T. D. 1,205 ft.; drlg. (corrected depth).
Rycade Oil Corp.'s No. 5 Chittim .....T. D. 3,442 ft.; standing; hole full sulphur water.
Rycade Oil Corp.'s No. 5 Sullivan, in C of Sec. 82, Blk. 7, in the I.&G.N. Sur. .....T. D. 2,540 ft.; drlg. in lime.
Rycade Oil Corp.'s No. 3 Chittim, Blk. 7, Sur. 116, H.& G.N., 175 ft. N of No. 1, 10 ft. W, 325 ft. S line.....T. D. 6,636 ft.; shut down for orders.

**MEDINA COUNTY**

Pat Armstrong's No. 1 C. W. Butts, in George C. Hanson Sur. .....T. D. 1,102 ft.; shut down.
Pan American Pet. Co.'s No. 1 Antoine Hart, in Harrison Sur. No. 799, 15 miles S from Hondo .....T. D. 250 ft.; drlg.
Donaldson Oil & Dev. Co.'s No. 2 Adams Co., James Hillenmeyer No. 25 Sur., 600 ft. to E line of Sur., 150 ft. to S line of N half of Sur. .....Rig up.
F. E. Tegler's No. 6 J. P. Nixon, NW cor., J. J. Durst Sur. No. 14 .....T. D. 950 ft.; comp. 5 bbls. per day.
Pat Armstrong's No. 1 Crawford, 1,389 ft. N line, 2,550 ft. E line of Sur., 478.6 miles W from Devine.....Rigging up.
Pure Oil Co.'s No. 1 Nick F. Fahn, in Amos Hudson Sur. No. 587, near NW line of Sur. .....T. D. 1,700 ft.; approx.; drlg. in lime.

**MILAM COUNTY**

Service Oil & Gas Co.'s No. 1 Muldrow, L. Taylor Sur., SE cor. .....Location.
Hill & Bonwell's No. 1 B. Booker, James Welch Sur.....Fishing 2,020 ft.
Lloyd Oil Corp.'s No. 1 San Clement, Fokes Sur.....Spudded in.
A. H. Wray's No. 1 D. D. Fowler .....T. D. 1,688 ft.; sidetracked; 380 ft. of drill pipe lost in hole; now drlg.

**McMULLEN COUNTY**

Southern Crude Oil Purch. Co.'s No. 1 J. B. Baker, 2,310 ft. from S and E lines of Sec. 7, in the F. M. Lowe Sur. .....T. D. 3,503 ft.; abandoned dry.

**NUECES COUNTY**

H. Grimm et al's No. 1 A. R. Roberts, Blk. 79, Winter Vegt. Garden Subd., 6 miles NW of Robstown, 12 miles NE Agua Dulce Field .....T. D. 3,535 ft.; shut down; waiting on orders; contract depth.

**SAN PATRICIO COUNTY**

George B. Pickett's No. 1 Baldwin, 9,000 varas due E of Denton, 1,200 ft. S of the SE cor. of O'Niel Sur., Abstract 211 .....T. D. 1,060 ft.; set 10-in. surface csg. at 1,060 ft.; W.O.C.
LaFeria Oil & Gas Co.'s No. 1 C. C. Smith, in J. C. White Sur., 690 ft. to N line, 350 ft. to E line.....T. D. 2,252 ft.; standing.

**STARR COUNTY**

Smith & Adams' No. 1 Welch, Perdernal Sur.....T. D. 841 ft.; drlg.

**UVALDE COUNTY**

Waldrop & Welch's No. 1 H. S. Benson, 2 miles NW of Uvalde .....T. D. 970 ft.; shut down in lime rock.
Waldrop & Welch's No. 1 E. R. Edmonds, 1,750 ft. NW, 7,200 ft. W of Sec. 71, in the A. Gomez Sur., 8 miles S from Uvalde .....T. D. 750 ft.; shut down in Edwards lime.
Phantom Oil Co.'s No. 1 Claudt, Sec. 661 .....T. D. 1,274 ft.; drlg. in lime.

**WILLACY COUNTY**

Weimer-Richardson's No. 1 Elmore .....T. D. 1,860 ft.; shut down in gumbo.

**WILLIAMSON COUNTY**

Harlem et al's No. 1 H. H. Stiles, in the J. Bevil Sur., 220 ft. N and 330 ft. E of Sur. .....Rigging up.
Fred Beatty's No. 1 H. Bland, 450 ft. from N line, 1,000 ft. from E line of tract, in the P. Coursey Sur., 1 mile east from Taylor .....T. D. 1,176 ft.; shut down.
Fred Beatty's No. 1 J. B. Pumphrey, 1,328 ft. from S and E lines of Mrs. J. B. Pumphrey 168-ac. tract, in the W. Cartwright Sur. .....Rigging up.
M. Bartlett et al's No. 1 R. E. Thomas, 450 ft. from N line, 170 ft. from E line of S 50 of 100-ac. of farm in the H. Owen Sur. .....Spudded in.
E. L. Chapman's No. 2 J. H. McConnell, 1,070 ft. from W line, 150 ft. from N line of tract in the S. Miller Sur. .....Rigging up.
Elliot et al's No. 1 S. W. Jones, 600 ft. from W line, 400 ft. from S line of Alvert Nantz Sur. .....Spudded in.
McNeil & Peterman's No. 1 Marie Olive, 150 ft. from E line, 150 ft. from N line of 114-ac. tract in the S. Miller Sur. .....Rigging up.
C. P. Link's No. 1 T. P. Simmons, 150 ft. W of CEL. in the S. Miller Sur. .....Location.
E. L. Chapman's No. 1 Fuchs, in the S. Miller Sur.....T. D. 2,017 ft.; swabbing; very little oil.
E. L. Chapman's No. 2 Fuchs, 150 ft. SW line, 750 ft. NW line of 93-ac. tract, in the S. Miller Sur.....T. D. 1,000 ft.; drlg.
G. B. Peterman's No. 2 J. C. Abbott, 450 ft. from S and W line of Abbott 100-ac. tract, in the Simon Miller Sur., SE from Thrall .....Rigging up.
Bridwell et al's No. 1 H. L. Martin, 1,150 ft. from N line, 150 ft. from W line of Simon Miller Sur.....Rigging up.
McNeil et al's No. 1 R. L. Abbott, 330 ft. NW line, 150 ft. NE line of Abbott 15-ac. tract, in the S. Miller Sur. .....Spudded in.
Powell & Kykendall's No. 1 Christian Mager, in the W. Byerly Sur., 150 ft. N and 450 ft. E of farms of 150 acres .....Old well deepening.

E. L. Chapman's No. 3 W. Fuchs, 170 ft. from S, 753 ft. E of NW cor. of R. L. Abbott farm, or 350 ft. E of No. 2, in Simon Miller Sur. ..... Derrick.
E. L. Chapman's No. 1 Barney Lawrence, 330 ft. from SE and SW lines of farm, in the Simon Miller Sur... Rigging up.
E. L. Chapman's No. 1 J. F. McConnell, 150 ft. from S and W of 100-ac. farm, in the Simon Miller Sur... Derrick.
E. R. Ertell's No. 1 J. F. McConnell, 295 ft. from N line, 180 ft. from W of S 50-ac. of 100-ac. farm, in the Simon Miller Sur. ..... Derrick.
Keeshan et al's No. 1 R. L. Abbott, 170 ft. from N line, 772 ft. from W line of farm, in the Simon Miller Sur. ..... Derrick up.
E. W. Marts et al's No. 1 R. L. Abbott ..... Spudded in.
Taylor Temple Oil Co.'s No. 1 F. M. Cain, 876 ft. from E line, 150 ft. from N line of C. D. Johnson 109-ac. tract, in the S. Miller Sur. ..... Rigging up rotary.
J. A. Thompson's No. 1 T. H. Martin, 150 ft. N and E lines of 20-ac. tract, in the S. Miller Sur. ..... Location.
Westheimer & Daube's No. 1 R. L. Abbott, 150 ft. from N and W lines of 57-ac. tract, in the S. Miller Sur... Location.
R. Wilder's No. 1 H. T. Martin, 158 ft. from N and E lines of H. T. Martin 76.25-ac. tract, in the S. Miller Sur. ..... Rigging up rotary.
Simms Oil Co.'s No. 1 L. E. Lawrence, 150 ft. from N line, 150 ft. from W line of Lawrence 100-ac. tract, in the Simon Miller Sur., SE from Thrail..... T. D. 2,019 ft.; shut down; no oil; dry.
L. W. Wilson et al's No. 1 W. L. Lawrence, 150 ft. from W line and C N and S of 35-ac. tract or 1,400 ft. from SW line, 1,450 ft. SW line of H. Owens Sur.... Spudded in.

**WILSON COUNTY**

Empire Gas & Fuel Co.'s No. 1 Shook, 1,350 ft. NW line, 7,100 ft. SW line, Vincente Zepeda Sur..... T. D. 3,710 ft.; dry and abandoned.

**ZAPATA COUNTY**

John Pappas' No. 2 Cuellar, Por. 33 and 34 ..... T. D. 1,890 ft.; sand 1,880-90 ft.; failed to locate sand through tester; standing; show gas.
B. F. Nixon's No. 1 A. Gutierrez, 170 ft. S line, 332 ft. E line, Lot 5, Blk. 8, Partition 10, Borrego grant .... Location.
National Oil Co.'s No. 1 D. B. Adams ..... T. D. 690 ft.; shut down; lack of water; making considerable gas.

**ZAVALA COUNTY**

Weigand Bros.' No. 1 W. L. Gates, Hooper & Wade Sur. No. 13, 1,320 ft. S of N line, 1,220 ft. W of NE cor. Sur., about 16 miles S of Batesville ..... T. D. 1,920 ft.; drlg. in lime.
Jack Baldwin's No. 1 J. R. Price, in the W. E. Erskin Sur. No. 34 ..... Spudded in and shut down.
Southern Crude Oil Purch. Co.'s No. 1 Nat M. Washer, in the T. Pinckhardt Sur. No. 180, 1 deg. E, 6,795 ft. from SE cor. ..... T. D. 3,190 ft.; coring lime rock.
Ike Pryor's No. 1 Martha Campbell, 400 ft. from N line, 5,400 ft. from E cor. of Sur. Sec. 99, in the Martha Campbell Sur., 3½ miles NE from La Pryor.. T. D. 1,300 ft.; shut down.
F. Baldwin's No. 1 Washer, 300 ft. S and E of Sec. 34, in the W. E. Erskine Sur. ..... Spudded in and shut down.

## GULF COAST FIELDS AND WILDCATS

(Continued from Page 64)

Yount Lee Oil Co.'s No. 6 Woodward, southeast ..... Drlg. sandy shale showing oil 5,198 ft.
Yount Lee Oil Co.'s No. 1 Zadie Fisher, southeast ..... Drlg. hard sand 6,171 ft.

**RACCOON BEND—AUSTIN COUNTY**

Humble & Valley's No. 9-A Deutrich ..... Pumping 3,294 ft.
Humble & Valley's No. 2 Diener ..... Derrick.
Humble & Valley's No. 5-B Grawunder ..... Drlg. shale 439 ft.
Humble & Valley's No. 1-B Hardy ..... Rig.
Humble & Valley's No. 3 Helmuth ..... Drlg. shale 3,533 ft.
Humble & Valley's No. 1-C Mitchell ..... Location.
Humble & Valley's No. 7 Payne ..... Derrick.
Humble & Valley's No. 8 Payne ..... Derrick.
Humble & Valley's No. 5 Saunders ..... Drlg. sand 3,118 ft.
Humble & Valley's No. 4 Sherrill ..... Drlg. shale and lime 1,911 ft.
Humble & Valley's No. 7 Thompson ..... Derrick.
Humble & Valley's No. 7 Urban ..... Shut down 1,165 ft.
Humble & Valley's No. 8 Thompson ..... Drlg. sandy shale 1,439 ft.
Humble & Valley's No. 3 J. W. Wilson ..... Derrick.
Humble & Valley's No. 4 Ollie Wilson ..... Derrick.
Humble & Valley's No. 6 Woodley ..... Derrick.
Humble & Valley's No. 7 Woodley ..... Derrick.
Humble & Valley's No. 8 Woodley ..... Derrick.

**DE WALT—FORT BEND COUNTY**

Humble Oil & Ref. Co.'s No. 3-B Bankers Mortgage ..... Comp. flowing 745 bbls. pipe line oil 3,717 ft.
Humble Oil & Refg. Co.'s No. 13 Brazos ..... Derrick.
Humble Oil & Refg. Co.'s No. 14 Brazos ..... Drlg. shale 1,814 ft.
Humble Oil & Ref. Co.'s No. 13 Sugarland ..... Drlg. gumbo 830 ft.

**HUMBLE—HARRIS COUNTY**

Benedum & Trees' No. 1 Foley, south ..... Drlg. gumbo 824 ft.
Continental Oil Co.'s No. 1 Koltar, south ..... Drlg. sand and shale 3,720 ft.
Houtex Oil Co.'s No. 1 O'Boyle, west ..... Drlg. sand and rock 4,756 ft.
Humble Oil & Refining Co.'s No. 11 Williams, south ..... Drlg. shale 4,145 ft.
Humble Oil & Ref. Co.'s No. 12 Williams ..... Rig.
M. LaRue's No. 1 Cicero ..... Oil sand 3,320 ft.
T. P. Lee's No. 1 Wheeler & Pickens, east ..... Drlg. gumbo and lime 3,138 ft.
Lee & Wilson's No. 1 Bender, west ..... Spudded.
Rio Bravo Oil Co.'s No. 1 fee, west ..... Drlg. hard sand 3,779 ft.
Showers & Moncrief's No. 1 Hull ..... Heaving shale 5,057 ft.
Southern Drlg. & Prod. Co.'s No. 1 Allo ..... Set 2 joints screen 3,978 ft.; comp. flowing 1,000 bbls. oil.
Cullen & West's No. 2 Burt, east ..... Oil sand 4,750 ft.; setting casing.
Sun Oil Co.'s No. 4 Bender, west ..... Drlg. hard sand 4,472 ft.
Sun Oil Co.'s No. 48 River, north ..... Drlg. 503 ft.
The Texas Company's No. 24 House, north ..... Drlg. sticky shale 3,664 ft.
The Texas Company's No. 271 Landslide ..... Drlg. 1,846 ft.

**BLUE RIDGE—FORT BEND COUNTY**

Sinclair Oil & Gas Co.'s No. 1 Blakely ..... No report.

**PIERCE JUNCTION—HARRIS COUNTY**

Continental Oil Co.'s No. 2 Prudential (workover) ..... Pumped salt water 4,322 ft.; shut down.
Navarro Oil Co. and Texas Exploration Co.'s No. 18 Dooley ..... Set 69 ft. screen 4,831 ft.; comp. flowing 1,200 bbls. oil.
Rio Bravo Oil Co.'s No. 12-A Settegast (workover) ..... Drlg. sandy shale and lime 3,853 ft.
Rio Bravo Oil Co.'s No. 13-A Settegast (workover) ..... Drlg. shale 3,494 ft.
Rio Bravo Oil Co.'s No. 18-A Settegast, west ..... Derrick.
Rio Bravo Oil Co.'s No. 19-A Settegast ..... Location.

**LIBERTY—LIBERTY COUNTY**

The Texas Company's No. 6 Green, northwest ..... Hard sand showing oil and gas 3,012 ft.; to test.

**PULL—LIBERTY COUNTY**

The Texas Company's No. 1 Barrow fee ..... Rig.
The Texas Company's No. 2 Hannah-Vacuum ..... Fishing drill pipe 5,067 ft.

**BIG CREEK—FORT BEND COUNTY**

Benedum & Trees' No. 1 J. F. Ahlers ..... Derrick.
Gulf Production Co.'s No. 21 Davis (workover) ..... Cutting screen.
Navarro Oil Co.'s No. 4 Hausler ..... Drlg. sticky shale 3,950 ft.

**LOST LAKE—CHAMBERS COUNTY**

Pure Oil Co.'s No. 10 Mayes ..... Pulling screen to workover after swabbing dry 2,818 ft.
Pure Oil Co.'s No. 11 Mayes ..... Drlg. lime 979 ft.
Pure Oil Co.'s No. 4 Lost Lake ..... Total depth 4,479 ft. in cap rock, hole heaved to 2,690 ft.

**NASH—BRAZORIA COUNTY**

Rycade Oil Corp.'s No. 36 Wisdom ..... Drlg. sticky shale 6,043 ft.

**SOUR LAKE—HARDIN COUNTY**

Lake View Oil Co.'s No. 8 Minor ..... No report.
Gilbert Oil Co.'s N. 107 Gilbert ..... Derrick.
M. E. Peveto's No. 1 Merchant ..... Comp. pumping 20 bbls. oil 1,494 ft.

**SARATOGA—HARDIN COUNTY**

Rio Bravo Oil Co.'s No. 80-A Cotton ..... Pumping 503 ft.
Rio Bravo Oil Co.'s No. 80-C Cotton ..... Standing 245 ft.
Rio Bravo Oil Co.'s No. 82-A Cotton ..... Derrick.

**GOOSE CREEK—HARRIS COUNTY**

Humble Oil & Ref. Co.'s No. 77 Simms-Smith ..... Failed to make drill stem test 5,835 ft.; to deepen.
A. F. Bradbury's No. 5 Gillette ..... Tested fresh water 1,208 ft.; to deepen.

**SPINDLETOP—JEFFERSON COUNTY**

Yount Lee Oil Co.'s No. 2 McFaddin (workover) ..... Rigging up to deepen 2,517 ft.
Yount Lee Oil Co.'s No. 61 McFaddin (workover) ..... Sand showing oil 5,198 ft.; to test.
Yount Lee Oil Co.'s No. 79 McFaddin (workover) ..... Drlg. shale and lime 2,946 ft.
Yount Lee Oil Co.'s No. 97 McFaddin (workover) ..... Comp. pumping 120 bbls. net oil 4,934 ft.
Yount Lee Oil Co.'s No. 124 McFaddin ..... Comp. flowing 200 bbls. oil 4,881 ft.
Yount Lee Oil Co.'s No. 127 McFaddin ..... Drlg. 4,846 ft.
Yount Lee Oil Co.'s No. 128 McFaddin ..... Comp. flowing 500 bbls. oil, 20 per cent water, 2,606 ft.
Yount Lee Oil Co.'s No. 129 McFaddin ..... Rig.
Yount Lee Oil Co.'s No. 82 Gladys City (workover) ..... Sand showing oil 3,376 ft.; to test.
Yount Lee Oil Co.'s No. 99 Gladys City (workover) ..... Drlg. 4,072 ft.

**WEST COLUMBIA—BRAZORIA COUNTY**

Saxet Oil Co.'s No. 1 Hogg ..... Derrick.

**NORTH DAYTON—LIBERTY COUNTY**

V. H. Borsodi's No. 1 Gulf ..... Drlg. lime 1,963 ft.
John A. Deering's No. 6 fee ..... Standing.
Humble Oil & Refining Co.'s No. 1 Jamison, south ..... Running tubing 4,956 ft.
Harrison Oil Co.'s No. 1 Jamison ..... Plugged from 5,043 to 4,952 ft.; trying to shut off salt water.
Harvey Smith's No. 1 Simmons & Brown ..... Fishing drill stem 3,980 ft.
The Texas Company's No. 1 Paraffine fee ..... Drlg. dry sand 3,767 ft.

**HIGH ISLAND—GALVESTON COUNTY**

Gulf Production Co.'s No. 5-A Smith ..... Drlg. sand and shale 4,953 ft.
Marrs McLean's No. 17 Cade ..... Oil sand 3,766 ft.; to test.

**ORCHARD—FORT BEND COUNTY**

Gulf Production Co.'s No. 22 Moore ..... Drlg. 559 ft.
Gulf Production Co. No. 21 Moore ..... Drlg. 1,642 ft.

**REFUGIO—REFUGIO COUNTY**

Fox & Heflin's No. 2 Fannie Heard ..... Rig.
Houston Oil Co.'s No. 14 Rooke ..... Total depth 3,699 ft.; cem. 8¼-in. casing 3,684 ft.; to test.
Houston Oil Co.'s No. 1 Tom Heard ..... Cored sand showing oil and gas 5,456 ft.
Houston Oil Co.'s No. 1 Doughty ..... Coring gas sand 5,446 ft.
Houston Oil Co.'s No. 1 Leisering ..... Oil sand 3,683-93 ft.; cem. 8¼-in. casing 3,683 ft.
Houston Oil Co.'s No. 1 Vance ..... Cem. surface casing 453 ft.
Houston Oil Co.'s No. 1 Kay ..... Cem. surface casing 463 ft.
Houston Oil Co.'s No. 9 Fannie Heard (workover) ..... Testing oil sand 3,704-18 ft.
Houston Oil Co.'s No. 2 Ryalls (workover) ..... Milling 3,484 ft.
Houston Oil Co.'s No. 1 Rose Lambert ..... Rigging.
Houston Oil Co.'s No. 1 Sitterle ..... Derrick.
Independent Oil & Gas Co.'s No. 1-C Heard ..... Drlg. lime rock 5,184 ft.
Independent Oil & Gas Co.'s No. 4 Claude Heard ..... Drlg. gumbo and lime 1,732 ft.
Independent Oil & Gas Co.'s No. 5 Claude Heard ..... Drlg. sand rock 1,109 ft.
Independent Oil & Gas Co.'s No. 1 Mercy Academy ..... Drlg. lime and shale 4,665 ft.
Independent Oil & Gas Co.'s No. 1 Helen Reilly ..... Drlg. sand 4,038 ft.
Independent Oil & Gas Co.'s No. 1 M. F. Lambert ..... Drlg. hard sandy shale 1,202 ft.
Independent Oil & Gas Co.'s No. 3 West ..... Comp. gas well spraying oil; sand 3,677-86 ft.
Edwin M. Jones' No. 1-A J. F. B. Heard ..... Reset screen 3,689 ft.; swabbing
Edwin M. Jones' No. 1-A Mitchell ..... Location.
Edwin M. Jones' No. 1 Jeter ..... Oil sand 3,681-96 ft.; swabbed and sanded up.
Larco Co.'s No. 4 Strauch ..... Drlg. 351 ft.
Mission Drlg. Co.'s No. 1 O'Brien ..... Oil sand 5,406-27 ft.; cem. 8¼-in. casing 5,406 ft.
Mission Drlg. Co.'s No. 1 Moss ..... Plugged from 5,493 ft. to 5,486 ft.; tested salt water.
T. P. Morgan's No. 1 St. Johns ..... Rig.
Morgan Oil Corp.'s No. 1 Powers ..... Drlg. hard sticky shale 6,126 ft.
Morgan Oil Corp.'s No. 6 Town Commons ..... Drlg. sandy lime 1,371 ft.
Morgan Oil Corp.'s No. 7 Town Commons ..... Cem. 12½-in. casing 379 ft.
Pearson Properties' No. 1 Johnson ..... Comp. flowing 300 bbls. oil, 5/16-in. choke 3,690 ft.
Rutherford-Traylor Oil Co.'s No. 1 Cable ..... Drlg. sandy lime 896 ft.
Saxet Oil Co.'s No. 2 Ryals ..... Drlg. shale 2,104 ft.
Saxet Oil Co.'s No. 2 Cable ..... Derrick.
Strube & Strube's No. 1 Cable ..... Fishing drill pipe 3,625 ft.
Sun Oil Co.'s No. 3 Buckley, Lot 5, Blk. 2 ..... Cem. 5 3/16-in. casing 3,568 ft.; total depth 3,693 ft.
Sun Oil Co.'s No. 4 Buckley ..... Derrick.
Sun Oil Co.'s No. 2 Johnson ..... Cem. 12½-in. casing 524 ft.
Union Producing Co.'s No. 2 Lambert ..... Drlg. hard lime 5,279 ft.
Union Producing Co.'s No. 3 Lambert ..... Drlg. sticky shale 730 ft.
Union Producing Co.'s No. 3 Morgan-Shelly ..... Coring 3,668 ft.
Union Producing Co.'s No. 4 Morgan-Vance ..... Location.
Union Producing Co.'s No. 3 Morgan-Vance ..... Swabbing to test sand 3,681-89 ft.
Union Producing Co.'s No. 3 O'Brien ..... Drlg. hard shale and lime 3,998 ft.
Union Producing Co.'s No. 4 O'Brien ..... Drlg. sandy shale 3,904 ft.
Union Producing Co.'s No. 4 Shelley ..... Comp. flowing 500 bbls. oil; sand 3,647-61 ft.
Union Producing Co.'s No. 3 Powers ..... Drlg. gumbo 1,227 ft.
Union Producing Co.'s No. 4 Powers ..... Location.
Union Producing Co.'s No. 2 Shelton ..... Derrick.
Union Producing Co.'s No. 3 Mitchell ..... Cem. 12½-in. casing 1,215 ft.
Union Producing Co.'s No. 4 Mitchell ..... Location.
Union Producing Co.'s No. 1-A Rose Lambert ..... Comp. flowing 100 bbls. oil and 3,600,000 ft. gas on ¼-in. choke sand 6,458-68 ft.; oil increasing

**SOUTH LOUISIANA FIELDS**

**LOCKPORT—CALCASIEU PARISH**

Vacuum Oil Co. and Gulf Ref. Co.'s No. 25 Miller ..... Drlg. sandy shale 4,343 ft.
Vacuum Oil Co. and Gulf Ref. Co.'s No. 26 Miller ..... Started drilling.
Vacuum Oil Co. and Gulf Ref. Co.'s No. 27 Miller ..... Rig.
Vacuum Oil Co. and Gulf Ref. Co.'s No. 5 Freiberg & Wolf ..... Derrick.

**HACKBERRY—CAMERON PARISH**

Calcasieu Oil Co.'s No. 17 Watkins ..... No report.
Calcasieu Oil Co.'s No. 5 Caldwell ..... No report.
Duhon Oil & Mineral Co.'s No. 1 Duhon ..... Derrick.
Rex Petroleum Corp.'s No. 1 Duhon ..... Bailed dry; standing.
Rycade Oil Corp. and Humble's No. 5 Gulf Land ..... Location.
The Texas Company's No. 6 State, Calcasieu Lake ..... Drlg. sand and shale 2,364 ft.

**JENNINGS—ACADIA PARISH**

Cline, Smith & Cline's No. 9 Conklin ..... Pumped salt water 3,260 ft.
The Texas Company's No. 5 Rayne heirs, King tract .... Drlg. 7,458 ft.
Yount Lee Oil Co.'s No. 8 Houssiere-Latrielle, Section 47-9s-2w ..... Drlg. 6,320 ft.
Yount Lee Oil Co.'s No. 6 Crowley ..... Drlg. sand and lime 4,820 ft.

**VINTON—CALCASIEU PARISH**

Gulf Refining Co.'s No. 50 Star-Vincent ..... Cem. 10-in. casing 808 ft.
Marrs McLean's No. 4 Gray (workover) ..... Drlg. 2,112 ft.
Vinton Petroleum Co.'s No. 5 Matilda Gray ..... No report.

**BAYOU BOUILLON—ST. MARTIN PARISH**

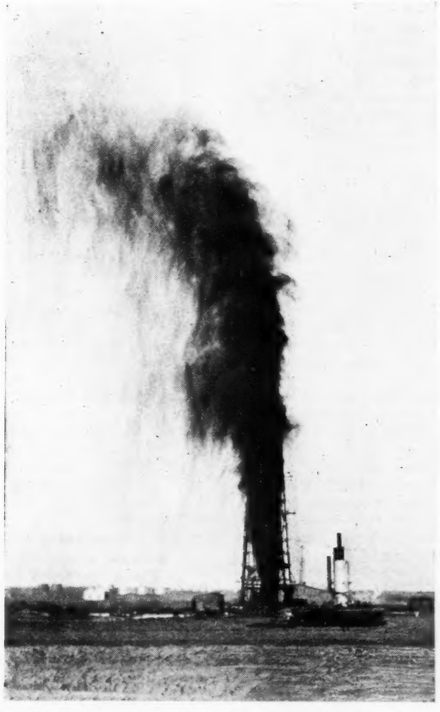
Rycade Oil Corp.'s No. 6 Atchafalaya fee ..... Location.
Rycade Oil Corp.'s No. 9 Bouillon fee ..... Drill stem stuck 3,590 ft.
The Texas Company's No. 2 St. Martin Land Co. ..... Drlg. shale 5,848 ft.

# ANOTHER FAMOUS WELL

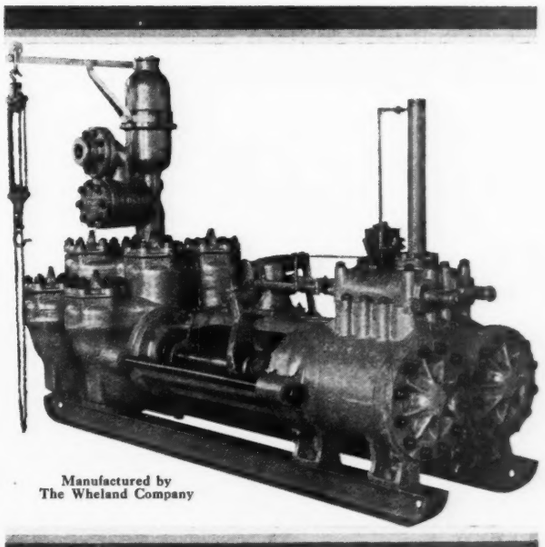
## added to the achievements of Lucey Rotary Equipment

LUCEY
"WHEREVER THERE'S OIL"

In deep fields where such wells as the Mary Sudik No. 1 are encountered, the very best and most reliable equipment is necessary. The Lucey H-15000 15″ x 7¾″ x 18″ Duplex Slush Pump has proven particularly successful because of its rugged construction and ability to handle large volumes and high pressures.



*I.T.I.O's Mary Sudik No. 1, which is estimated at 50,000 bbls. of oil and 200,000,000 feet of gas. This great well is 6,448 feet deep and is undoubtedly one of the largest "sweet oil" wells in the world.*



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PLOESTI, ROUMANIA
SAN FERNANDO, TRINIDAD, B. W. I.

**STARKS—CALCASIEU PARISH**
J. O. Davis' No. 1 Industrial ..... Standing 3,775 ft.
Gulf Refining Co.'s No. 20 Lutcher-Moore ..... Comp. pumping 80 bbls. oil in cap rock 1,198 ft.

**SWEET LAKE—CAMERON PARISH**
Pure Oil Co.'s No. 9 Yount Lee ..... Drlg. sticky shale 4,509 ft.

**ANSE LA BUTTE—ST. MARTIN PARISH**
Yount Lee Oil Co.'s No. 1 Hebert ..... Drlg. 5,681 ft.

**SORRENTO—ASCENSION PARISH**
Gulf Refining Co.'s No. 18 United Land Co., cap rock area ..... Rig.

**MISCELLANEOUS WILDCATS**

**TEXAS**

**AUSTIN COUNTY**
Black Oil Co.'s No. 1 Lancashire, near Sealey ..... No report.
Empire Gas & Fuel Co.'s No. 1 Boyd, San Felipe ..... Drlg. 1,600 ft.
O'Hara et al's No. 1 Batla, near Raccoon City ..... No report; previous report drlg. shale 3,904 ft.
McInnery et al's No. 1 McDay, west of Kinney ..... Shut down 500 ft.

**BRAZORIA COUNTY**
The Texas Company's No. 1 Ewin, Harvey Little Sur. .... Drlg. 2,436 ft.
Mills Bennett Production Co.'s No. 1 Random, Allen ..... Drlg. sand and lime 3,039 ft.
Faust et al's No. 5 Faust ..... No report; previous report drlg gumbo 3,905 ft.
Rucks & Patterson's No. 1 Hunter, southwest of Hoskins.. Shut down 1,185 ft.
Rycade Oil Corp.'s No. 1 Rapid City, Henry Austin Sur... Total depth 1,150 ft.; cem. 13⅜-in. casing 1,135 ft.
Shell Petroleum Corp.'s No. 1 Blakely-Winston, Danbury ..... Washing to test sand 4,812-20 ft.
Steel & Strickland's No. 1 Lockridge ..... Rig.

**CHAMBERS COUNTY**
Shell Petroleum Corp.'s No. 1 Herff, Moss Bluff ..... Drlg. gumbo 2,272 ft.
Pure Oil Co.'s No. 1 Kirby, Charles Tilton Survey ..... Rig.

**FORT BEND COUNTY**
Gulf Production Co.'s No. 2 Sugarland, Clodine ..... Rig.
Pure Oil Co.'s No. 1 Jackson Brown, Barrett and Harris Sur. ..... Derrick.

**GALVESTON COUNTY**
Superior Oil Corp.'s No. 1 Jackson ..... Drlg. 163 ft.

**GRIMES COUNTY**
Cranfill & Reynolds Oil Co.'s No. 1 Baylor, southeast Navasota ..... No report.

**HARRIS COUNTY**
Baldwin and associates' No. 1 Kitzman, Cypress ..... Shut down 4,247 ft.
Higgins Oil & Fuel Co.'s No. 1 Sladous, Mykawa ..... Drlg. shale 6,526 ft.
Humble Oil & Ref. Co.'s No. 7 Warren, Hockley ..... Drlg. sand 4,925 ft.
Humble Oil & Ref. Co.'s No. 2 Minnetex ..... Drlg. rock 1,201 ft.
Rich et al's No. 1 Highlands ..... Derrick.
Sloan Prospecting Co.'s No. 1 Ulrich, Hannah Nash Sur. .. Drlg. shale 4,512 ft.
Martin, Drake & Jones' No. 1 Haney ..... Drlg. shale 3,960 ft.
Watts Brothers' No. 1 Hubert, Mykawa ..... Total depth 5,523 ft.; plugging back to 4,530 ft.

**JEFFERSON COUNTY**
Bayou Oil Co.'s No. 1 Hooks-Borduge ..... Drlg. gumbo 3,081 ft.
Gulf Production Co.'s No. 8 Bordages ..... Drlg. shale and lime 6,579 ft.
Gulf Production Co.'s No. 1-A Guy Junker, Fannett ..... Oil sand 4,646 ft.
Gulf Production Co.'s No. 5 Burrell, Fannett ..... Drlg. hard sand 4,038 ft.
The Texas Company's No. 1 Fitzhugh, Big Hill ..... Total depth 5,857 ft.; fishing.
Westbury Oil Co.'s No. 1 West, Choate Sur. ..... Shut down 2,850 ft.

**LIBERTY COUNTY**
Gulf Production Co.'s No. 1 Weiser ..... Drlg. hard sand 6,600 ft.
Gulf Production Co.'s No. 4 Boyt, Hankamer ..... Rig.
Gulf Production Co.'s No. 5 Boyt, Hankamer ..... Drlg. gumbo and boulders 860 ft.
Gulf Production Co.'s No. 1 McFaddin, Moss Bluff ..... Rig.
Humble Oil & Ref. Co.'s No. 1 Sabine Tram, Devers .... Rigging.
Cranfill & Reynolds Oil Co.'s No. 9 Esperson, Sheeks ..... Sand and shale showing oil 2,687-2,700 ft.; cem. 6⅝-in. casing 2,667 ft.
Cranfill & Reynolds Oil Co.'s No. 2 Moores Bluff, Sheeks.. Comp. flowing 350 bbls. 2,315 ft.
Yount Lee Oil Co.'s No. 2 Moores Bluff, Sheeks ..... Comp. pumping 90 bbls. net oil 3,347 ft.

**MATAGORDA COUNTY**
Cockburn et al's No. 1 Hawkins, Shepherds, Mott ..... No report.

**MONTGOMERY COUNTY**
Kelley-Kaker's No. 2 Guergus ..... Shut down 1,915 ft.

**ORANGE COUNTY**
Gulf Production Co.'s No. 1 W. H. Starks, Port Neches ... Started drilling.
The Texas Company's No. 2 Kuhn, Port Neches ..... Rig.
The Texas Company's No. 2 Stark, Port Neches ..... Drlg. 304 ft.

**WALLER COUNTY**
Kirby Petroleum Co.'s No. 2 Davis, San Felipe ..... Drlg. 1,046 ft.
W. P. Morris' No. 1 Chapman, Donoho Sur. ..... No report.

**SOUTH LOUISIANA**

**ACADIA PARISH**
Calcasieu Oil Co.'s No. 1 Hays, Sec. 10-8s-1w ..... Drlg. 4,500 ft.
Charles P. Siess' No. 1 Lyons, Sec. 4-10s-1e ..... Location.

**CALCASIEU PARISH**
Wilfred Lahay's No. 2 James ..... Standing 3,775 ft.
Union Sulphur Co.'s No. 1 Moss, Sec. 8-10s-9w ..... Drlg. gumbo and lime 4,177 ft.

**CAMERON PARISH**
Shell Petroleum Corp.'s No. 14 Watkins, Black Bayou ... Shut down in lime and calcite 1,071 ft.
Shell Petroleum Corp.'s No. 15 Watkins, Black Bayou ... Location.
The Texas Company's No. 5 Calcasieu Lake, Calcasieu Lake Dome ..... Shut down for mud 991 ft.
Vacuum Oil Co.'s No. 1 Cameron Meadows, Sec. 21-14s-13w ..... Sandy shale showed oil 2,937 ft.; trying to make drill stem test.

**IBERIA PARISH**
The Texas Company's No. 5 Vermillion Bay ..... Location.

**IBERVILLE PARISH**
Shell Petroleum Corp.'s No. 4 Wilbert, White Castle .... Drlg. hard sandy lime 4,450 ft.
Standard Oil Co.'s No. 4 Schwing, Bayou Blue ..... Drlg. sandy shale 2,110 ft.
Standard Oil Co.'s No. 5 Schwing, Bayou Blue ..... Building derrick.
Standard Oil Co.'s No. 5 Wilbert, Bayou Blue ..... No report.
Standard Oil Co.'s No. 6 Wilbert, Bayou Blue ..... Drlg. 2,000 ft.
Standard Oil Co.'s No. 1 Case, Bayou Des Glaise ..... Drlg. 2,556 ft.
Standard Oil Co.'s No. 2 Case, Bayou Des Glaise ..... Location.

**JEFFERSON DAVIS PARISH**
Pure Oil Co.'s No. 1 May, Sec. 1-10s-5w ..... Reaming 3,765 ft.
Shell Petroleum Corp.'s No. 1 Heyd, Iowa ..... Rigging up.
Yount Lee Oil Co.'s No. 1 Courtney, Welsh ..... Rig.

**LA FOURCHE PARISH**
Gulf Refining Co.'s No. 1 City of New Orleans, Bay Champagne ..... Drlg. shale 6,118 ft.
The Texas Company's No. 1 Leesville ..... Rig.

**PLAQUEMINE PARISH**
Humble Oil & Ref. Co.'s No. 1 Cockrell-Moran, Lake Grand Ecaille ..... Tested salt water 1,739 ft.; pulling screen.
Humble Oil & Ref. Co.'s No. 1 Lake Washington, Lake Grand Ecaille ..... Drlg. hard sand 4,499 ft.
The Texas Company's No. 4 State, Garden Island Bay .... Rig.

**ST. LANDRY PARISH**
Elbof Exploration Co.'s No. 1 Ledoux, Eunice ..... Shut down 4,364 ft.
Herbert-Baker Oil Co.'s No. 1 Fisher, Sec. 10-3s-4e ..... Shut down 4,000 ft.
Gulf Refining Co.'s No. 3 Gaudet, Port Barre ..... Drlg. sandy shale 3,630 ft.
Gulf Refining Co.'s No. 2-A Hoskins, Port Barre ..... Drlg. 3,426 ft.
The Texas Company's No. 5 Botney Bay, Port Barre .... Comp. flowing 1,500 bbls. oil 3,673 ft.
The Texas Company's No. 6 Botney Bay, Port Barre .... Waiting cement to set.

**ST. MARTIN PARISH**
The Texas Company's No. 1 fee, Hager Dome ..... Abandoned 6,620 ft.
The Texas Company's No. 2 St. Martin ..... See Bayou Boutlon
The Texas Company's No. 1 Iberville, Hager ..... No report.

**ST. MARY PARISH**
Pure Oil Co.'s No. 2 Wax Lake, Sec. 12-17s-9e ..... Started drilling.
Vacuum Oil Co.'s No. 1 Zenor, Patterson ..... Drlg. gumbo 5,813 ft.

**TERREBONNE PARISH**
Charles Paggi's No. 2 Evergreen, Sec. 145-15s-16e ..... No report.
The Texas Company's No. 4 State-Bay St. Elaine ..... Drlg. sandy shale 3,410 ft.
The Texas Company's No. 1 La. L. & E. Co., Bay Junope.. Location.
The Texas Company's No. 2 State, Lake Pelto ..... Drlg. sand 412 ft.
The Texas Company's No. 3 State, Lake Pelto ..... Cap rock 4,611 ft.
The Texas Company's No. 3 State, Caillou Island ..... Location.
The Texas Company's No. 4 State, Lake Barre ..... Building derrick.
The Texas Company's No. 3 La. L. & E. Co., Four Isle ... Drlg. 1,316 ft.

## SOUTHWEST TEXAS

(Continued from Page 67)

J. R. Tiller, south central part of lease in the J. Hinds Survey, total depth 2,692 feet, pumping 75 bbls.

### ABANDONED TESTS

**Kohler Pool—Duval County**

Everett Suladie's No. 1 Peters, 165 feet south line, 230 feet west line, Survey 33, total depth 2,777 feet.

**Darst Creek—Guadalupe County**

Magnolia Petroleum Co.'s No. 1 L. V. Echols, 150 feet to northwest and southwest lines of farm, 3,650 feet to southwest, 3,220 feet to northwest of survey, total depth 2,715 feet. Same company's No. 2 L. V. Echols, 150 feet to southwest and southeast lines of lease, 300 feet southeast of No. 1 well, 164½-acre tract in the James Hodges Survey, total depth 2,845 feet. Same company's No. 2 S. M. Roamel, 150 feet each way from northeast corner of 40-acre tract in the James Hodges Survey, location abandoned.

### NEW LOCATIONS

**Darst Creek—Guadalupe County**

Empire Gas & Fuel Co.'s No. 2 Knoblock, 150 feet south line, 450 feet east line of 40-acre tract in the J. R. Robinson Survey.

Gulf Production Co.'s No. 1-B Dix-McKean, 450 feet south and north lines, 150 feet east and west lines of 19-acre tract offset to Magnolia's No. 1-A Roamel in the J. R. Robinson Survey. Same company's No. 2 Knoblock, 150 feet from southeast corner of 35-acre tract in the J. R. Robinson Survey. Same company's No. 1 D. C. Malaer, 150 feet from northwest line and southwest line of tract in the J. R. Alexander Survey, rigging up.

Magnolia Petroleum Co.'s No. 7 Thomas Dix, 450 feet from southwest line, 475 feet from northwest line of tract in the J. W. Robinson Survey. Same company's No. 2-A Roamel, 150 feet north of south line, 450 feet west of east line or 300 feet southwest of No. 1-A Roamel.

The Texas Company's No. 5 Lemmie Anderson, 450 feet south line, 418 feet west line of 50-acre tract in the J. C. Darst Survey. Same company's No. 7 Dallas Wilson, 150 feet south and east lines of 40-acre tract in the J. C. Darst Survey. Same company's No. 1 Schmidt and others, 150 feet south and east lines of 179-acre tract in the J. C. Darst Survey.

United North & South Development Co.'s No. 3 Thomas Dix, 150 feet from northeast corner of 50-acre tract, offset to Magnolia's No. 1-A Roamel in the J. R. Robinson Survey.

**Pettus Area—Bee County**

Humble Oil & Refining Co.'s No. 2 J. J. McKinney, 600 feet south of No. 1 McKinney, 150 feet east of west line of Randolph Survey in the Randolph Survey, total depth 782 feet, drilling in gumbo and boulders.

Union Producing Co.'s No. 7 George Ray, 450 feet northwest of No. 1 McKinney discovery in the Kerr Survey, total depth 346 feet, set 10-inch surface casing. Same company's No. 8 George Ray, 350 feet due west of Humble's No. 2 McKinney in the Kerr Survey, rigging up.

**Jennings Pool—Zapata County**

O. W. Killam's No. 17 Cuellar, 4,423 feet northwest line, 1,942 feet northeast line, Cerrito Blanco grant, derrick.

Killam-Duggan's No. "B" 14 Cuellar, 450 feet west line, 200 feet south line, Survey 277, total depth 150 feet, drilling.

### DRILLING ACTIVITY

**Darst Creek—Guadalupe County**

Humble Oil & Refining Co.'s No. 2 Tadlock, 150 feet south and north lines, 172 feet east and north lines of tract in the J. C. Darst Survey, location. Same company's No. 1 Sally Wilson, 150 feet from north line, 183 feet from west line, location. Same company's No. 4 Sallie Wilson, 500 feet east of No. 2, 150 feet north line of tract in the Jacob Darst Survey, derrick. Same company's No. 1 Yates Wilson, 150 feet from north and west lines of tract, location. Same company's No. 4 Yates Wilson, 172 feet west, 150 feet north of southeast corner of tract in the J. C. Darst Survey, location.

Magnolia Petroleum Co.'s No. 2 Richurg, 450 feet from west line, 150 feet from south line of 102-acre tract in the east corner of the J. R. Robinson Survey, location.

Sun Oil Co.'s No. 6 Knoblock, 150 feet from north and east lines of 75-acre tract in the J. R. Robinson Survey, total depth 1,500 feet, drilling.

F. L. Thompson's No. 1 Posey, 150 feet from northwest corner of Posey 71-acre tract in the J. R. Robinson Survey, derrick.

**Dobrowolski—Bexar County**

Penn-Tex Oil Co.'s No. 1 Dobrowolski, 150 feet from south line, 150 feet from east line of west 67 acres of Dobrowolski 147-acre tract in the M. Menchaca Survey, total depth 520 feet, drill stem stuck. Same company's No. 2 Dobrowolski, 450 feet from south line, 150 feet from east line, west 67 acres of 147-acre tract in the M. Menchaca Survey, 5 miles southeast from San Antonio, total depth 620 feet, drilling in shale.

**Lytton Springs—Caldwell County**

Cranfill-Reynolds' No. 3 Strawn, 150 feet east line, 150 feet south line of farm in the P. Martinez Survey, 4 miles west from Lytton Springs, location.

**Bruner Pool—Caldwell County**

Humble Oil & Refining Co.'s No. 5 T. Briscoe, 1,050 feet from west line, 150 feet from north line of 56-acre tract in the J. Hinds Survey, location.

**Lasater Pool—Brooks County**

Houston Oil Co.'s No. 1 Holbein-Wormser, 330 feet north line, 6,540 feet east line direct offset, 660 feet south of No. 1 Lasater in the Palo Blanco de Maguellas Survey, total depth 5,340 feet, drilling in black shale and gumbo.

**Cartwright Pool—Live Oak County**

Houston Oil Co.'s No. 1 R. Boothe, 3,000 feet from west line, 300 feet south line in the M. B. Kilvin Survey, total depth 53 feet, hard sand, set 15½-inch casing.

**Agua Dulce Pool—Nueces County**

Agua Dulce Oil & Gas Co. and South Texas Producing Co.'s No. 1 J. A. Daudermann, 640 feet south and north lines, 640 feet west and east lines of Block 14 or the southeast quarter of Section 32, Benton Pasture Subdivision, making up gas and water line connection.

Houston Oil Co. of Texas' No. 1 M. E. Brooks, 330 feet from north and east lines of fractional Section 29, Benton Pasture Subdivision in the Los Sauces grant, rigging up.

**Nursery Pool—Victoria County**

Humble Oil & Refining Co.'s No. A-3 Jay J. Welder, 1,634 feet south east line, 736 feet southwest line in the D.L.& C. Survey, 1½ miles northeast from Nursery, total depth 6,275 feet, cored sand, slight oil show, drilling ahead.

**Cole Pool—Duval County**

F. S. Bain and Miller I. Shaw's No. 1 S. Benavides, 1,950 feet west line, 180 feet north line, Survey 173, riging up.

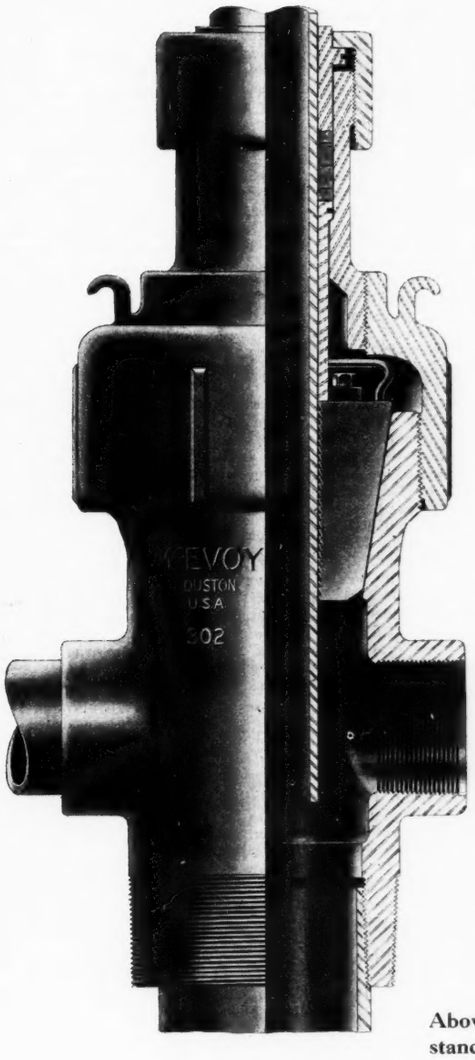
Wilkins Seacord's No. 1 S. Benavides, 660 feet northwest line, 150 feet northeast line, Block 8, Survey 174, derrick.

Cole Petroleum Co.'s No. 68 Rosa Benavides, 660 feet northeast line, 660 feet northwest line, Cole Subdivision, Mariano Arispe grant, Block 11, Survey 14, total depth 2,750 feet, drilling.

**Roma Pool—Starr County**

The Texas Company's No. 1 "B" V. C. de Guerra, 150 feet south line, 150 feet west line of north 1,173 acres, Share

# EFFICIENT OIL MEN




## DO NOT TAKE CHANCES

They realize that there are thousands of dollars invested in a well in drilling equipment, in pipe, in casing, in labor, in overhead. They do not endanger all this investment through a little false economy in not properly controlling the well. They know that the future production of the well may be seriously curtailed by letting a well get out of control.

### THE McEVOY "UNIVERSAL" CASING AND TUBING CONTROL HEAD

is for efficient oil men—men who are particular as to the kind of equipment that goes into their wells.

## Read These Advantages!

*They appeal to the efficient oil man*

(1) Efficiency of packing off tubing.

(2) Pipe is supported by slips thus permitting raising or lowering without cutting.

(3) Screwed connections of oil field pipe or casing size.

(4) Tested for highest working pressure found on well. Strength far above bursting pressure of casing used.

Above are a few of the reasons so many major oil companies are standardizing on the McEVOY "UNIVERSAL" CASING AND TUBING AND CONTROL HEAD.

*Write for Descriptive Folder*

Protect your well with the McEVOY UNIVERSAL CASING AND TUBING CONTROL HEAD. It is truly "universal," for it meets every need of the top of the well from "drilling-in" to "pumping."

# J. H. McEVOY & COMPANY

**HOUSTON, TEXAS, U.S.A.**

**Pacific Coast Branch: McEvoy Screen Pipe Co., 2428 E. 56 St., Los Angeles, Calif.**

92, Porcion 68, of Partition Porcion 67, 68, 69, 70, 71, 72, Jurisdiction of Mier, total depth 2,850 feet, drilling.

**Kohler Pool—Duval County**

Humble Oil & Refining Co.'s No. 44 Kohler, 495 feet north line, 495 feet east line, Survey 424, rigging up.

Simms Oil Co.'s No. 9 Dinn, 660 feet east line, 660 feet south line of northwest of southeast of Survey 143, rigged up, standing.

Humble Oil & Refining Co.'s No. 41 Kohler, 2,970 feet south line, 330 feet east line, Survey 165, location. Same company's No. 43 Kohler, 825 feet north line, 165 feet west line, Survey 169, total depth 1,750 feet, testing.

**Schoolfield O'Byrne—Duval County**

C. E. Long's No. 5 Hahl, 850 feet north line, 950 feet east line, Block 27, Survey 250, total depth 2,415 feet, standing.

**Albercas Pool—Webb County**

O. W. Killam's No. 1 Bruni, 575 feet north line, 238 feet east line, Albercas grant, Block 33, total depth 2,586 feet, fishing.

**Carolina-Texas Pool—Webb County**

E. D. Claggett and Sam Evans' No. 1 Webster, 150 feet south line, 990 feet west line, Survey 684, rigging up.

George S. Marshall's No. 2 Webster, 810 feet south line, 1,170 feet west line, Survey 684, total depth 3,000 feet, in sand.

W. R. Shankle's No. 2 Webster, 1,170 feet west line, 150 feet south line, Survey 684, rigging up.

**Cole Pool—Webb County**

South Texas Production Co. and others' No. 1 Perez-Leal, 150 feet west line, 2,492 feet north line, Survey 667, total depth 1,700 feet, set 10-inch casing at 44 feet, drilling.

O. W. Killam's No. 18 Bruni, total depth 3,014 feet, sand 3,004-14 feet, set 6⅝-inch casing at 3,002 feet, tested small show gas and 7 joints of fluid showing oil with show salt water.

E. H. Buckner' No. "A" 1 Rosa Benavides, 660 feet northwest line, 660 feet northeast line, Cole Petroleum Co. Subdivision, Mariano Arispe grant, Block 5, Survey 14, total depth 1,613 feet, sand 1,609-13 feet, salt water, standing.

Magnolia Petroleum Co.'s No. 2 King-Harper, 660 feet north and east lines, Block 2, Survey 323, location.

**Charco Redondo—Zapata County**

C. R. Moore & J. M. Moore's No. 1 Adela G. de Flores, 330 feet northwest line, 330 feet northeast line, E. M. Doty Oil & Gas Subdivision, Block 99, Charco Redondo grant, location.

**Jennings Pool—Zapata County**

O. W. Killam's No. 21 Cuellar, 450 feet northeast line, 4,586 feet northwest line, Cerrito Blanco grant, total depth 1,450 feet, drilling.

H. Muckelroy's No. 3 Trevino, 460 feet south line, 300 feet east line, Block 25, Survey 412, rigging up to drill deeper from 1,281 feet.

Magnolia Petroleum Co.'s No. 3 Cuellar, 150 feet to northeast and southeast lines of Survey 245, total depth 1,697 feet, drilling.

A. L. Edgington's No. 2 Trevino, 490 feet east line, 150 feet south line, Block 26, Survey 412, total depth 1,226 feet, cap rock 1,226-28 feet, sand 1,228-48 feet, set 6⅝-inch casing at 1,226 feet.

South Texas Production Co.'s No. 9 Measles and others, 3,830 feet southeast line, 660 feet northeast line, Cerrito Blanco grant, rigging up.

W. R. Shankle's No. 1 E. Gutierrez, 150 feet northeast line, 3,014 feet northwest line, Share 4, Fansler Partition in the Comitas grant, total depth 350 feet, drilling.

Livingston & Twiss' No. 1 Trevino, 150 feet north line, 150 feet west line, Block 7, Survey 66, total depth 1,005 feet, drilling.

F. M. Blair & F. M. Blair, Jr.'s No. 3 Trevino, 500 feet east line, 150 feet north line, Block 1, Survey 66, location.

R. F. Blankenship's No. 2 Garza, Block 2, Survey 413, 425 feet west line, 425 feet north line, ottal depth 1,305 feet, drilling.

G. F. Owen's No. 2 Montemayor, 820 feet east line, 150 feet north line, Block 7, Survey 64, total depth 500 feet, drilling.

## CALIFORNIA FIELDS

(Continued from Page 72)

6,807 feet. No. 1 Hughes of the Two-In-One Oil Co. also registered satisfactory production upon recompletion during the week as this project upon being redrilled and deepened to 7,039 feet was returned to production flowing 835 bbls. of 29.6 gravity oil daily. The Dabney-Johnston Oil Co., which has consistently maintained an aggressive development campaign during the past several months, brought in No. 45, a new well, flowing 628 bbls. initially from 6,507 feet, the oil being exceptionally clean and testing 28.7 degrees. J. J. Davis also chalked up a satisfactory completion when No. 15 Britton was brought in flowing 550 bbls. per day from 7,190 feet, the hole having been finished with a 6⅝-inch oil string carrying 763 feet of perforated.

The Richfield Oil Co. failed to secure a natural flow in No. 14 Booth, a new well finished at 5,432 feet, but subsequently listed it as good for 175 bbls. per day on a compressor. J. L. Roggie recompleted No. 3 Signal at 7,341 feet but this well, which was good for 280 bbls. per day, was cutting in excess of 50 per cent. The Bartheloma Oil Syndicate's No. 6 bottomed at 7,510 feet is being listed for completion doing 105 bbls. of unusually clean 29.1 gravity oil, but notwithstanding the high quality of production secured the well will probably never pay out. The Western Oil & Refining Co. finished No. 2 Deutcher early in the week, but this new well, carried down to 7,343 feet and finished with a 5¾-inch oil string, was only good for 151 bbls. per day, the oil testing 25.6 degrees and showing a cut of 15 per cent.

**Playa Del Rey**

With eight wells actually making hole and several more being rigged up preparatory to an early spud, the Playa Del Rey Field of Los Angeles basin is rapidly taking definite form. The Ohio Oil Co., discoverer of this field, is rotating ahead in four additional projects, two of which, No. 1 Howland at 5,750 feet and No. 2 Gun Club at 5,560 feet, are expected to pick up the pay within the next few weeks. The Union Oil Co. is making preparations to resume drilling in No. 1 Del Rey, located southwest of the discovery well, following the landing of 980 feet of 20-inch. This project, which is located in a swampy country, presented several difficult problems in its career to date. The swampy terrain required a specially constructed road and more than the usual allottment of wooden piles before rig construction got under way. After these preliminary details had been completed the company soon ran into additional trouble before the 100-foot level had been reached. While rotating ahead at 80 feet, circulation was temporarily lost and while the crew was investigating the loss the rotary drilling fluid began appearing all around the rig. In order to correct this condition the company was obliged to set 80 feet of stove pipe in addition to the 980 feet of 20-inch subsequently landed. The Barnsdall is driving piles for its first well on the Burke lease and is building a road and hauling material for No. 2, which will be located 772 feet south and 108 feet east from the northwest corner of the same lease. The Burlingham Oil & Refining Co. is also driving piles for a new well in this area and rig construction will get under way within the next few days.

The Standard Oil Co. recompleted No. 43-A Emery in the West Coyote Field of Los Angeles basin during the early part of the week and incidentally proved up the existence of 485 feet of oil sand in the recently discovered Emery horizon. This well, which was given a preliminary production test several weeks ago, at which time it made 1,175 bbls. per day from 5,382 feet, has been redrilled and deepened to 5,735 feet and returned to production flowing 1,510 bbls. of clean 31.7 gravity oil and 700,000 feet of natural gas daily. With a string of 9-inch landed and cemented at 5,250 feet, the well is at the present time producing from 485 feet of formation. The significance which attaches to the completion of this well lies in the fact that it has proven up the existence of an additional productive horizon below the zone proved up several years ago. The Standard now has two dormant deep zones in the West Coyote Field with the probability that additional development may prove up the existence of perhaps at least one more.

**Big Well in the Ocean**

The Pacific Western Oil Co. greatly enhanced the value of its properties in the western end of the prolific Elwood Field of Santa Barbara County when it brought in another large producing well the latter part of this week. The Pacific Western's new completion was No. 4, Tideland permit No. 92, which came in under a natural flow doing 2,750 bbls. of exceptionally clean 38 gravity oil daily from 3,408 feet. This new well, located out in the ocean approximately 1,000 feet from shore, has subsequently built up to 6,000 bbls. per day and should go higher before the expiration of the five-day flow test permitted under the present curtailment program.

The completion of the new well gives the Pacific Western four producers in this field and increases the company's potential daily production to around 15,000 bbls. The Barnsdall and Rio Grande companies, which have developed a potential daily production at Elwood of 45,635 bbls., have three incompleted wells standing cemented in the pay, one of which, No. 2, on Tideland permit No. 88, is scheduled for early completion.

**New Well in Kettleman Hills**

In the Kettleman Hills Field, Kings County, the Standard Oil Co. has just completed No. 81 in Section 11 flowing approximately 2,000 bbls. of 60 gravity crude oil and 60,000,000 feet of natural gas daily from 7,035 feet. It has not yet been turned into the series of gas traps so that its maximum daily production of crude oil has not been actually measured.

## LA.-ARK. FIELDS

(Continued from Page 63)

Drilling Co.'s No. 1 Hardy, a rank wildcat on the Texas line in Section 18-19-16, got a show of gas in a drill stem test at 1,727 feet. There was some salt water along with it and the well was last reported drilling at 1,825 feet.

Five wells were completed in the Monroe-Richland gas territory, in the headlines for the last month or so by virtue of the Electric Bond & Share-Magnolia Gas Co. transactions. Louisiana Gas & Fuel Co., an Electric Bond & Share subsidiary, completed No. 25 Crossett, Section 29-21-5, Morehouse Parish, making approximately 1,000,000 feet of gas at 850 pounds rock pressure, total depth 2,391 feet, in the so-called "second sand." It is the first in this lower horizon since last January when two wells from a little below 2,300 feet gave rise to hopes of doubling Monroe's productive life. It may yet, but as experience in exploring this hoped-for second horizon has been so far, most of the wells drilled to it have been failures. United Carbon Co. is drilling one of the deepest holes yet sunk in the Monroe proven area, No. 2 Puckett, in Section 15-19-5. It was dry at 2,270 feet, salt water at 2,365 feet and 2,482 feet and is drilling at 2,775 feet.

**Biggest Gas Well**

J. A. Noe and others' No. 1 Wright, Section 27-20-4, Morehouse Parish, gauged 34,560,000 feet of gas at 620 pounds pressure, total depth 2,152 feet, one of the biggest wells in the field in recent months if not the largest. In Ouachita Parish, Louisiana Gas & Fuel Co.'s No. 1 Breard, Section 46-18-4, gauged 2,212,000 feet at 975 pounds pressure, total depth 2,175 feet, and United Carbon Co.'s No. 4 Spade, Section 6-18-4, gauged 2,700,000 feet, total depth 2,143 feet. The same company's No. 1 McInnis, in Section 19-20-4, Union Parish, gauged 5,040,000 feet at 830 pounds pressure, total depth 2,141 feet. Arkansas-Louisiana Pipe Line Co.'s No. 3-B E. A. and F. B. Sartor, Section 24-16-5, was estimated at 52,000,000 feet of gas, total depth 2,450 feet, and the company has location for No. 4 Sartor, in the NW SW, Section 18-16-6. Location for LeGrand and others' No. 1 Sample, in Section 11-14-11, a Red River wildcat, has been abandoned.

Bethany gas district of Panola County, Texas, had three completions—Arkansas-Louisiana Pipe Line Co.'s No. 11 Werner, in the E. F. Mitcheson Survey, 3,750,000 feet, total depth 3,331 feet; Magnolia Petroleum Co.'s No. 2 Tiller, in the Jane Thorpe Survey, 7,000,000 feet at 950 pounds pressure, total depth 2,585 feet, and Natural Gas Producing Co.'s No. 6 Roquemore, in the B. C. Jordan Survey, an old well drilled deeper, 1,000,000 feet of gas at 2,240 feet, total depth 2,269 feet. H. C. Cates has taken two blocks in the south central and western portions of Panola County. The first is of 12,500 acres surrounding the J. C. Tippett Survey in the south central part of the county and the second is 10,000 acres surrounding the Harrison Davis Survey in the west end of the county. Both are on five-year commercial leases, dollar rental, and a drilling clause calling for a well to start in four months from date and, if necessary, to go to 2,700 feet. R. E. Davidson and others' Marion County wildcat, west of production in Caddo Parish, cemented 6⅝-inch at 2,500 feet to test a sand at 2,505-15 feet, from which a core showed considerable oil. A week or so ago this well topped the chalk at a level betraying the location as on a distinct "high" and there was an immediate response in leasing and royalty trading and now that this show has been obtained it is one of the hot spots in this division.

**Dry Hole in Mount Holly Area**

Mount Holly district of Ouachita County, Arkansas, passed out of the picture again when McDonald Brothers abandoned No. 2 Wilson, Section 25-15-18, as a dry hole at 2,908 feet. E. L. Champan's No. 2 Bradley, in Section 2-16-16, Union County, a Smackover well, pumped 15 bbls., total depth 2,028 feet. Transcontinental Oil Co. has abandoned its Prairie County test, No. 1 Novak, Section 36-2n-6, as a dry hole at 2,930 feet. H. H. Taylor has made location in the NE SW, Section 1-13-29, Washington County, for a deep test. Meanwhile, O'Hara & Shetterley's No. 1 Boyd, Section 12-16-32, Washington County, has been dropped from the report and all other Madison and Washington County wildcats are shut down.

Palmer Corp.'s No. 1-A Marston, Section 11-19-10, West Carroll Parish, set tubing and packer at 2,688 feet and tested salt water but is figured getting the water from a bad seat for the string of 5-inch cemented at 2,592 feet, so will recement.

A report that the late Senator Tom Taggart of Indiana was interested in the Simplex Oil Co., arose from the fact that the Simplex Oil Co., Inc., owns jointly, on a 50-50 basis with the T. Taggart Estate, approximately 400 acres on which there are 9 producing wells, which undivided one-half interest the Simplex Co. announces it is now contemplating to purchase. The company states it is the owner of over 3,000 acres of leases and 15 producing oil and gas wells independently, in which neither the late Senator Taggart nor the T. Taggart Estate ever had any interest.

## MICHIGAN FIELDS

(Continued from Page 70)

following companies which share in the Pollock-Bowman wildcat strike: the Ohio Fuel Supply Co., of Columbus, Ohio; Mellon-Pollock Oil Co. and the Wittmer Oil & Gas Properties, both of Pittsburgh, Pa. J. G. Gillespie represents the Ohio company, G. H. Fink, the Mellon-Pollock company and J. W. Casholder the Wittmer Oil & Gas Properties in their activities near Mount Pleasant.

**Pure Tank Farm**

The third 55,000-bbl. storage tank of the Pure Oil Co. at the Jackson tank farm has been connected to the com-

## *"Here, Lad—*

That was a happy idea of yours to 'Stable-Arc' weld that last pipe line.

It's by far the best line we ever built.

It looks now that it must stand as a record unless you can give birth to another idea."

***The Lincoln "Stable-Arc" Welder***

— welds easier
— makes better welds
— permits greater output because of the steady uniform arc throughout entire welding range, which is the result of:

Variable voltage design
Laminated magnetic circuit
Separately-excited generator field
Double control of welding heat
All steel construction

***No other welder has all these features.***

## *"No, Pop—*

But since I can't, perhaps we can *adopt* one.

My friend here, *Arc Welding*, has just had another cubit added to his stature in industry through Lincoln's new 'Fleet-Weld' electrode.

It will weld joints *more than twice as fast* as can be done with ordinary electrodes, and the welds so produced by these new high-speed 'Fleet-Weld' electrodes are extremely ductile—averaging around 20%—and its average tensile strength is away beyond that of ordinary structural steel—in fact 20,000 lbs. beyond.

It's hard to beat that one, so let's adopt the idea for the new line . . . It's better than giving birth to another idea because, as you well know, Pop, a foolproof stork is a rare bird."

**The Lincoln Electric Co.,**
**Dep't. No. 26-4, Cleveland, O.**

"Stable-Arc" W-141

# LINCOLN WELDER

pany's gathering lines in the Mount Pleasant Field. The fourth 55,000-bbl. tank is now under construction and sites have been graded for the erection of two more similar tanks which will give the company a total storage capacity of 330,000 bbls. The company's 4-inch gravity gathering lines also have been extended allowing the company to cut out and retire several field pumping stations formerly necessary to carry the crude to the storage tank farm.

The Pure Oil Co. last month completed eight new wells on its own leases in addition to those of independent producers from all of which the company is drawing crude.

**Muskegon Field**

A new 1,000,000-foot gas well in the Dundee formation and a dry hole at a considerable depth in the Dundee below the original pay sands were added to the record of the Muskegon oil field.

The new gasser is the Lake Shore Petroleum Co.'s No. 1 Joseph DeVries, SW NE, Section 8-10-16, Muskegon Township. Cased at 1,982 feet it struck the Dundee at 1,985 feet and was completed as a dry gas well at 2,002 feet.

The Diamond Oil & Gas Co.'s No. 1 North Muskegon Development Co. finally has been plugged after standing idle at 2,315 feet for several weeks. It is one of the deepest wells on structure in the field but was so near the edge that it soon quit producing in paying quantities in the Dundee.

The Swastika Oil & Gas Co.'s No. 1-B Charles E. Gilbert, SW SE, Section 6-10-16, Muskegon Township, made about a 50-bbl. pumper in the Dundee pay sands at 2,044-47½ feet.

**NEW LOCATIONS**

Five widely scattered wildcats have been started on new locations: White River Oil Corp.'s No. 1 Quinlan, SE NW NW, Section 29-12n-7w, Montague Township; Peninsular Oil Co.'s No. 1 Fowler, SW NW, Section 15-17n-4w, Grant Township, Clare County; W. E. Eldridge's No. 1 Wetteran, SE NW SE, Section 10-8s-21w, Berrien County, near New Buffalo; Vestaburg Oil Co.'s No. 1 A. Anna, SW NE SE, Section 27-12n-5w, Richland Township, Montcalm County, and Amos Turner's No. 1 Doolittle, NW NE NE, Section 14-4n-2e, Locke Township, Ingham County.

**Ravenna Wildcat**

A show of gas and oil was struck in the Ravenna wildcat, deepest in this part of the state and one of the deepest ever drilled in Michigan, according to officials of the Michigan Petroleum Co., which is drilling the well. The show was said to be too small for commercial production and was believed to have been struck in the St. Peter formation directly below the Trenton limestone. The well is 5,570 feet deep and is on the C. E. Moe property, SE SE, Section 6-9n-13w, Chester Township, Ottawa County. It is just over the line from Muskegon County and about 2 miles east of the village of Ravenna. No casing has been run since 2,550 feet. Drilling will be continued indefinitely, it was stated by John Linck, president of the company.

**Allegan County Wildcat Dry**

Another Allegan County wildcat was completed dry, National Petroleum Co.'s No. 1 Oliver W. Gere, NW NW, Section 13-3n-12w, Hopkins Township. It was ready to be plugged at 2,108 feet in the Dundee after a good show of oil at about 1,900 feet. It is the fifth dry hole drilled in the county during the last 18 months. Drilling of the East Shore Oil Co.'s No. 1 Myland well, NW NE, Section 26-2n-11w, Martin Township, Allegan County, has been started. The Pure Oil Co. is drilling its No. 1 Heeve, NE SE, Section 2-4n-14w, Overisel Township, Allegan County. The National Petroleum Co. is planning to drill another wildcat for Allegan in Salem Township, according to Jacob Bolema, of Muskegon, president.

**Manistee Wildcats**

Two wildcats near Manistee and about 100 miles north of the Muskegon Field are nearing the Dundee formation and possible pay sands. The Diamond-Thompson-Holland's No. 1 Lee A. Lewis, NW SE, Section 15-20n-17w, Grant Township, Mason County, expects to get the Dundee at about 2,100 feet in this well. Tackett & Drake's No. 1 Manistee Sand & Dock Co., NE NW, Section 13-21n-17w, Filer Townhsip, Manistee County, is drilling at about 1,900 feet.

## CANADIAN FIELDS

(Continued from Page 68)

at 4,548 feet and bailing small quantities of light crude.

In the far north, Invader Oils' No. 1, LSD 10, Section 9-21-3w5, is reported nearing the Dakota sands at 4,731 feet, with 10-inch casing at 4,618 feet. The company is planning for an exceptionally deep test, with probably 6,000 feet of drilling required to reach the deep lime.

**Alberta Pacific Operations**

Shareholders of Alberta Pacific Consolidated Oils, Ltd., held their annual meeting at Calgary and the directorate was re-elected, with the exception of A. G. Clarke who recently resigned as managing director. The officers are: president, Dr. A. B. Singleton; vice president, H. G. H. Glass; secretary-treasurer, R. R. Harper; directors, William Hackney, J. W. McArdle, James Dumma, F. T. Wright, T. A. Hornibrook, R. W. Ward, W. S. Newton, C. J. Thacker, T. M. Carlyle.

**Royalite Program Forecasted**

There are numerous reports in circulation indicating a possible new trend of development work in the Turner Valley. In recent years Imperial operations have been largely devoted to carrying out drilling obligations entered into with various lease-holding companies in the South Turner Valley; and along this line new tests in prospect include Home Oil Co.'s Nos. 7 and 8 in Section 20-19-2w5, and Lowery Petroleums' No. 2 in Section 17-19-2w5, all of which will be started this spring.

Pending this South Turner Valley drilling no new work has been undertaken in the central area, operations there being limited to the completion of tests already started. It is now reported that plans are under consideration for testing of the extensive acreage held by Royalite Oil Co. and Dalhousie Oil Co. in the central field, and the reports foreshadow eight new tests for the Royalite and six for the Dalhousie company. Last fall the northern end of the field, where Foothills Oil & Gas Co. holds extensive acreage, was allowed to become inactive with the abandonment of Foothills' No. 2; but it is possible some new work will be undertaken this year on the holdings there. It is understood the new drilling in the central field will not be confined to sections already proven, but will test some heretofore unproven acreage.

**Red Coulee Field**

Recent completions on the Montana end of the structure have stimulated interest and activity in the international Red Coulee Field. Monalta Oil Co.'s No. 2 Buckley, Section 1-37-4w, has production about 2 feet in the sand at 2,408 feet depth. Owing to heavy gas pressure the well caved and bridged, but oil rose 1,800 feet in the hole. The crude will be run to the Illinois Pipe Line Co.'s line. Unofficial estimates place production around 400 to 500 bbls. There is some uncertainty as to the producing horizon, most reports claiming the test got the Vanalta sand after drilling through the Sunburst without a show; but the depth indicates production may come from the Sunburst, though at last reports no water was indicated. Monalta's No. 3 will probably be drilled in SE SW, Section 1-37-4w, with rotary outfit, and it is reported that contracts for a series of wells will be let immediately.

North and west of Monalta's No. 2, Cosmos Petroleum Co.'s No. 1 Thacker, Section 2-37-4w, is cleaning out, swabbing and running liner to bottom at 2,558 feet. Casing was run to 2,510 feet and formation shut off secured. It is claimed the well has sufficient gas to flow oil when control head has been installed. Production is estimated between 300 and 400 bbls. Cosmos' No. 2 will be started three locations south. It is reported the Ohio Oil Co. has spotted three tests on an 80-acre tract between the Monalta and Cosmos producers. Cosmos Oil Co. has acquired 280 acres additional on structure since the strike, and is reported planning to bring in a second string of tools.

Mid-Continent Oil & Refining Co.'s No. 2 Farbo, Section 2-27-4w, is drilling below 2,000 feet and looks like the next well in production. Mid-Continent's No. 1 is delivering between 80 and 100 bbls. a day. On the Alberta side, Vanalta Oils' Nos. 1 and 2 are each reported averaging 55 to 60 bbls.

On the Alberta end of the structure Southern Alberta Exploration Co.'s No. 1, LSD 8, Section 3-1-16w4, is reported rigged up ready to spud in. Devonshire Oils' No. 1, LSD 3-4, Section 10-1-16w4, is reported rigging. Alberta Pacific's No. 1, Section 3-1-16w4, offsetting Vanalta's No. 1 to the east, has derrick up. Beverly Oil Co.'s No. 1, LSD 3, Section 24-1-17w4, is reported working on derrick. Caledonia Oil Co.'s No. 1, LSD 16, Section 6-1-16w4, is preparing to start work about 1½ miles northwest of Vanalta's No. 1. Capitol Oil & Gas Co.'s No. 1, LSD 3, Section 21-1-16w4, is rigging up.

Dalco Oil & Gas Co. of Calgary has spudded in an important test in SW, LSD 4, Section 11-1-16w4, about 1½ miles north of the Vanalta producers on the northern end of the Red Coulee structure, sometimes termed the Despo Field. There are three potential producing horizons, the Vanalta sand around 3,090 feet, Ellis sand around 3,230 feet and Madison lime around 3,350 feet. Dalco's No. 1 is being drilled by contract. No. 2 will spud in before June 1, and two other tests will follow at two-month intervals.

Western Range Oil Co. of Vancouver, British Columbia, is preparing to start a test on Red Coulee acreage. Peninsular Petroleums, Ltd., which recently took over the Wainwell interests in the Wainwright Field, is reported planning to secure acreage and drill in the Red Coulee area.

**Drilling in Foothills**

On the Morley Reserve structure, Wabash Oils' No. 1 is at 3,066 feet and preparing to resume. The well is in the Devonian limestone and has been blowing at intervals for months, accumulating heavy gas pressure, blowing itself clear and then dying down. The gas flows usually continue for two or three days at a time, and have lately shown slight traces of oil.

On the Waite Valley structure, Richfield Petroleums' No. 1, LSD 4, Section 25-20-4w5, is drilling around 4,109 feet after getting a small oil show.

On the Moose Dome, Moose Oils' No. 1, LSD 16, Section 29-22-6w5, is reported drilling in the Devonian limestone around 2,400 feet. Small shows of gas have been met at intervals from 510 feet, and recently a show of oil at 2,270 feet.

**Border Fields**

In southern Alberta, Hudson's Bay Oil & Gas Co. is starting an important new wildcat in the Keho Lake district east of Nobleford. The company has cellar dug for No. 1 in LSD 2, Section 17-11-22w4.

In Lomond district, Hudson's Bay's No. 2 Lomond, Section 23-17-18w4, is reported drilling below 1,300 feet.

In the Spring Coulee district, Alberta Pacific Consolidated's No. 1, Section 15-4-23w4, is reported to have spudded in.

Commonwealth Petroleums' No. 1, LSD 9, Section 9-3-15w4, is drilling near the bottom of the Devonian limestone at 3,685 feet with small shows of oil and gas.

On the Mowmac structure, west of Lethbridge, Teapot Dome Oils' No. 1, Section 31-9-23w4, is preparing to start work about April 10.

In the Wainwright Field, east central Alberta, Peninsular Petroleums, Ltd. is preparing to start work on the properties of Wainwell Oils, Ltd., recently taken over. Senator Oil & Gas Co.'s No. 1, McEntee farm, Section 23-44-6w4, has derrick up.

## OKLAHOMA FIELDS

(Continued from Page 58)

eastern Garfield County, about 6 miles north of the production in the Marshall Pool, in Logan County, found a showing of oil in the Viola lime at 5,680-5,758 feet. The oil rose in the hole 500 feet in a short time. The test was drilling deeper at 5,785 feet in Simpson dolomite.

**Perry Area is Active**

The area around Perry in Noble County is becoming active as the better weather arrives. The wildcatter apparently feels the undeveloped areas may be active this summer as acreage has been changing hands daily. It is also predicted several important wildcat tests may be drilled. The most active spot includes Sections 17, 18, 19 and 20-20-2w, Noble County, south of Perry. The area is about 3 miles south of the discovery well drilled by the Magnolia Petroleum Co. on the Young farm. Several sections have changed hands. An old well drilled by the Bu-Vi-Bar Petroleum Corp. in Section 28-21-2w, Noble County, found Misener sand at 5,168-84 feet with a 50-bbl. showing and was later drilled to the Wilcox sand at 5,270-5,337 feet, where it was abandoned.

**Shallow Pool in Muskogee County**

Muskogee County has a new shallow oil pool. Field work was increasing northwest of Muskogee in the northern part of the county. A summary of the area shows that three oil wells have been completed and one gas well, five tests drilling, two tests rigging up and four locations made. The activity started when H. L. Jolly completed No. 2 Caroline in Section 9-15-18, for 100 bbls. natural last month. The best completion to date in the pool was D. L. T. Co.'s No. 1 Caroline, SW cor. NE SW SW, Section 9-15-18, which flowed 280 bbls. the first 24 hours after a 40-quart shot. Some of tests in the pool are being drilled on five-acre tracts.

**Test in Washita County**

The Southern Investment Co. has spudded its No. 1 Music, NW cor.. Section 10-9-20w, Washita County. It is the only wildcat test drilling in the county and is located on a block of 4,500 acres, and is to test the deep formations. The county has recently become active from a leasing standpoint and a number of major oil companies are assembling acreage there.

**Good Wells in Stephens County**

Wirt Franklin Petroleum Corp.'s No. 2 J. Martin, NE cor. SE SE, Section 9-2s-6w, Stephens County, was completed after bailing in early last week. The well made 702 bbls. Tuesday and 587 bbls. on Wednesday. Oil was found in sand at 2,855-69 feet. Magnolia Petroleum Co. has staked another location on its Jones-Christy, in the SE cor. NW NW, Section 15-2s-6w, after completing its No. 1 Jones-Christy in the same section for 220 bbls. a day.

**Deep Tests in Caddo County**

In the Cement Pool, Caddo County, the Louisiana Oil & Refining Co.'s No. 4 Jones, SW cor. SE, Section 31-6-9w, was drilling to the deep pay horizon at 3,305 feet. The test had a showing of oil in broken shale at 3,278-96 feet. Ramsey Petroleum Corp.'s No. 1 Jones, NW cor. SW SE, Section 31-6-9w, was waiting for cement to set. This test has a showing of oil at 3,420-33 feet. Another well waiting to test the deep sand is the English Drilling Co.'s No. 5 Gafney, SE cor. NW SE, Section 31-6-9w. It has a showing of oil in sand from 3,246-65 feet. Same company's No. 1 Melton, C N half SE, Section 26-6-10w, has been plugged back to 3,500 feet and is shut down.

A new producing area has been found on the east side of the Little River area in Seminole County. Some express the opinion that the new well may result in the opening of a new Cromwell sand pool. The test is the Empire Oil & Refining Co.'s No. 1 C. Fish, SE cor. NE, Section 19-7-8, in Seminole County. It found Cromwell sand at 3,141-50 feet, where it swabbed 85 bbls. in 12 hours and 190 bbls. in 24 hours. The same company's No. 1 R. Fish in Section 19-7-8, was drilling at 4,065 feet in Woodford shale, and is to test the Wilcox sand.

Some new wells were completed in the Konawa Pool during the week. The Gypsy Oil Co.'s No. 2 Harjoche, SW

cor. NE NE, Section 17-6-6, flowed 50 bbls. from sand at 2,897-2,911 feet. Prairie Oil & Gas Co.'s No. 2 Harjo, NE cor. SE NE, Section 17-6-6, made 656 bbls. from the sand at 2,867-84 feet.

**Dry Hole on Earlsboro Townsite**

The first dry hole found on the townsite of Earlsboro was completed during the week. The test was McEwen & Walker's No. 1 Townsite, SE cor. SW NW, Section 8-9-5, Block 25, Lot 5. Wilcox sand was found from 4,332-54 feet with a hole full of water. The test was shut down and may be abandoned. J. Quinn's No. 1 Townsite, Block 10, Lot 1, NE cor. SW NW, Section 8-9-5, swabbed 190 bbls. in 19 hours from the Wilcox sand at 4,367-69 feet.

In the new South Earlsboro Pool developments have not resulted as favorably as leaseowners expected. The producing area in this pool may join the southwest extension of the East Earlsboro Pool. The first well south of discovery well in the South Earlsboro Pool, the Magnolia Petroleum Co.'s No. 1 Grounds, NE cor. NW, Section 23-9-5, Pottawatomie County, swabbed 1,050 bbls. in 20 hours from the Wilcox sand at a total depth of 4,227 feet, after being plugged back. Gypsy Oil Co.'s No. 1 Carbitcher, SW cor. SE, Section 14-9-5, Pottawatomie County, swabbed 95 bbls. of oil and 1½ bbls. of water an hour.

The Magnolia Petroleum Co.'s No. 1 Myers, NW cor. NE NE, Section 17-14-4, west of Chandler, in Lincoln County, was opened and flowed 90 bbls. of oil in one hour. The well has been shut in awaiting a pipe line to the field. The well was later pinched and when opened was dead. On a swabbing test it made 285 bbls. of oil in three hours. Magnolia Pipe Line Co. has completed a new line into the area and is now taking oil from the Magnolia Petroleum Co. wells.

Amerada Petroleum Corp. and Dixie Oil Co.'s No. 1 Stidham, NW cor. SW SW, Section 23-9-5, Pottawatomie County, in the South Earlsboro Pool, found water in the Wilcox sand at 4,290-4,300 feet. The water rose 1,000 feet in the hole.

**Oklahoma City's Shut-In Wells**

The initial shut-in production in the Oklahoma City Pool that has been allowed to produce for 24 hours or less as of April 5 was 338,491 bbls. The initial production of the wells and the approximate date each well will be opened follows:

| Company, lease— | Well No. | Bbls. | Date |
|---|---|---|---|
| I.T.I.O.: | | | |
| Watters | *3 | 2,204 | ..... |
| Farley-Fuzzell | 1 | [28]8,800 | 4-23-30 |
| Drake | *1 | 4,631 | 4-18-30 |
| L. Trosper | 1 | 4,080 | 4-23-30 |
| A. Brokaw | 1 | 7,018 | 4-24-30 |
| Hiddleston | 1 | [21]5,525 | 4-24-30 |
| Jones | *1 | 6,241 | 4-24-30 |
| Trosper | 5 | 167 | 4-30-30 |
| L. Canfield | 2 | [31]1,374 | 5- 2-30 |
| N. Emerson | *3 | [13]3,545 | 5- 2-30 |
| S. Bodine | 3 | [5]801 | 5- 3-30 |
| Thomas Fuzzell | 3 | [6]3,524 | 5- 3-30 |
| A. Bodine | 6 | 3,612 | 5- 4-30 |
| Canfield-Button | 2 | 2,686 | 5- 4-30 |
| Barker-Drake | *1 | [7]2,589 | 5- 4-30 |
| Unsell-Krager | *1 | 3,007 | 5- 9-30 |
| Theimer | *1 | [25]5,558 | 5-10-30 |
| C. Brokaw | 2 | [5]562 | 5-10-30 |
| Jones | *1 | [4]4,944 | 5-12-30 |
| Butterfield | *1 | [3]3,264 | 5-17-30 |
| Pasadena-Heights | *1 | [5]5,982 | 5-16-30 |
| Jones Community | *1 | [4]4,944 | 5-12-30 |
| Jones | *4 | [1]1,954 | 5-18-30 |
| Fortson-Farley | 3 | [15]5,272 | 5-20-30 |
| N. Emerson | *3 | [2]2,204 | 5-19-30 |
| E. Fortson | 2 | [3]3,364 | 5-19-30 |
| L. Farley | 1 | [19]8,833 | 5-21-30 |
| A. Bodine | 7 | [6]609 | 5-23-30 |
| Wilke-Anderson | *1 | 331 | 6- 1-30 |
| Sudik | *1 | [30]0,000 | ..... |
| L. Farley | 3 | [35]932 | 6- 5-30 |
| Unsell-Krager | *3 | [4]4,804 | 6- 9-30 |
| M. Fuzzell | 2 | [81]1,673 | 6- 9-30 |
| Prairie: | | | |
| Hiddleston | 6 | 14,000 | 4-21-30 |
| Hiddleston | 7 | 5,685 | 4-22-30 |
| W. Franklin: | | | |
| Lowery | *4 | 8,376 | 4-23-30 |
| Lowery | *6 | [6]6,339 | 5-19-30 |
| Lowery | *7 | [11]1,335 | 5-11-30 |
| Theimer | *1 | [7]7,896 | 5-17-30 |
| Eacock | *1 | [6]6,838 | 6- 1-30 |
| Cromwell: | | | |
| Trosper Park | *4 | [2]2,975 | 5-10-30 |
| Trosper Park | *10 | [9]9,015 | 5-21-30 |
| Sinclair: | | | |
| Vinci | *2 | [3]3,310 | 5-14-30 |
| Vinci | *1 | 14,005 | 5-17-30 |
| School land 54 | *2 | [5]5,235 | 5-21-30 |
| Sinclair et al: | | | |
| Kinter | *3 | [5]505 | 5-12-30 |
| Kinter | *4 | [5]5,000 | 5-19-30 |
| Kinter | *5 | 255 | 5-28-30 |
| Kinter | *7 | [26]630 | 5-29-30 |
| Colline: | | | |
| Olds | *5 | [13]3,467 | 5-16-30 |
| Warren | 4 | [11]1,622 | 5-13-30 |
| Warren | 7 | [15]5,000 | 6- 1-30 |
| Clauer | *2 | 5,130 | 5-23-30 |
| Olds | *9 | [16]1,169 | 6- 7-30 |
| Olds | *7 | [17]819 | 6- 8-30 |
| Slick: | | | |
| Hoopes | *1 | [1]1,064 | 5-17-30 |
| Hoopes | *2 | [6]6,758 | 5-20-30 |
| Shell: | | | |
| Petty | *2 | [12]260 | 5-13-30 |
| Heenan & Coe: | | | |
| Cunningham | *1 | [16]6,904 | 5-30-30 |
| Skelly: | | | |
| Hoopes | *3 | [13]322 | 6- 4-30 |
| Mid-Kansas: | | | |
| Mollman | *2 | 2,492 | 6- 5-30 |
| Total | 61 | 338,491 | 6- 9-30 |

*Wells producing from the Simpson sand. All others are producing from the Arbuckle lime.

[1]Estimated. [2]Fifteen hours. [3]Three and one-half hours. [4]Twelve hours. [5]Five hours. [6]Two and three-quarters hours. [7]Nineteen and one-half hours. [8]One hour. [9]Twenty hours. [10]Twenty-one hours. [11]Nineteen hours. [12]Twenty-two hours. [13]Eight and one-half hours. [14]One and one-quarter hours. [15]Six and one-third hours. [16]Eighteen and one-quarter hours. [17]Sixteen hours. [18]Three hours.

These notations indicate the number of hours the wells produced on their initial production test.

**Actual Field Production**

The actual production from the Oklahoma City Pool for the seven days ending April 7 was as follows:

| Day— | Bbls. | Wells |
|---|---|---|
| April 1 | 98,121 | 29 |
| April 2 | 76,199 | 33 |
| April 3 | 82,799 | 32 |
| April 4 | 132,633 | 33 |
| April 5 | 149,911 | 36 |
| April 6 | 95,797 | 31 |
| April 7 | 112,153 | 31 |

**Greater Seminole Production**

Oil production from the Greater Seminole area shows another decline for the week ending April 2. The decline for the area was approximately 23,000 bbls. The Seminole area averaged 196,340 bbls. from 1,836 wells. The daily average gauges for the different pools for the same seven days were as follows:

| Pool— | Wells | Bbls. |
|---|---|---|
| Little River | 367 | 30,490 |
| East Little River | 65 | 13,232 |
| Carr City | 58 | 8,963 |
| Maud | 137 | 6,046 |
| Mission | 107 | 10,127 |
| Bowlegs | 284 | 18,917 |
| Earlsboro | 292 | 32,061 |
| East Earlsboro | 139 | 35,160 |
| Seminole | 267 | 18,279 |
| East Seminole | 33 | 2,592 |
| Searight | 87 | 11,073 |
| Allen | 258 | 19,770 |
| Asher | 26 | 2,253 |
| Konawa | 27 | 8,043 |
| St. Louis | 481 | 38,170 |
| Sasakwa | 52 | 14,035 |
| Total | 2,680 | 278,611 |

**Seminole Oil Shipments**

The daily pipe line and tank car shipments for the seven days ending April 2 were 203,940 bbls. from the Seminole area, which is a decline of about 9,000 bbls. from the previous week. The shipments by companies for the same seven days were as follows:

| Company— | Bbls. |
|---|---|
| Barnsdall | 2,260 |
| Champlin | 3,533 |
| Continental | 1,246 |
| Consolidated | 459 |
| Cosden | 5,609 |
| Empire | 4,294 |
| Gypsy | 20,309 |
| Magnolia | 10,862 |
| Oklahoma | 32,522 |
| Prairie | 25,601 |
| Producers & Refiners | 3,031 |
| Pure | 5,159 |
| Deep Rock | 4,984 |
| Shell | 11,861 |
| Sinclair | 40,749 |
| Texas | 16,038 |
| Tidal | 12,300 |
| White Oak | 1,761 |
| Total | 202,578 |
| Tank cars | 1,362 |
| Grand total | 203,940 |

**Caddo County**

Magnolia Petroleum Co.'s No. 3 Rowe, SE cor. NE NE, Section 36-6-10w, is rigging up to deepen from 3,460 feet. Vaughn & Rush's No. 1 Gregory, SW cor. NE SW, Section 31-6-9w, is rigging up. No. 4 Gregory, SE cor. NW SW, Section 31-6-9w, is a rig under construction.

**Cotton County**

L. Loper's No. 1 Grimer, C SE NE, Section 21-1s-10w, is shut down on top of a sand at 1,990 feet. Baldwin & Sultan's No. 7 Rhone, SE cor., Section 35-1s-10w, is drilling at 2,180 feet. J. B. Nantz' No. 2 Man-Bah Quak, NW cor. SE NW, Section 29-1s-9w, is a rig and tools. No. 1 Patterson, SW cor. NW NW, Section 1-2s-10w, is rigging up. Harris & McNeal's No. 3 Chambers, NE cor. NW SW, Section 1-2s-10w, has cemented 6-inch pipe on top of a sand at 2,161 feet. Shasta Oil Co.'s No. 5 Patterson, SE cor. SW NW, Section 1-2s-10w, is drilling at 780 feet . No. 6 Patterson, SW cor. SE NW, Section 1-2s-10w, is rigging up. No. 7 Patterson, NW cor. SW NW, Section 1-2s-10w, is rigging up. No. 2 Watkins, NW cor. NE SW, Section 1-2s-10w, is drilling at 1,000 feet. No. 4 Cobb, SE cor. NE, Section 2-2s-10w, has cemented 6-inch pipe at 2,150 feet. No. 5 Burneaugh, SE cor. NE NE SE, Section 2-2s-10w, is drilling at 1,800 feet. No. 12 Slogan, NE cor., Section 2-2s-10w, is drilling at 1,650 feet. Shasta Oil Co.'s No. 4 Patterson, CSL SW NW, Section 1-2s-10w, has been completed for 60 bbls. in sand 2,157-61 feet. Harris & McNeal's No. 2 Chambers, CNL NW SW, Section 1-2s-10w, is flowing 60 bbls. from sand 2,-162-72 feet. Shasta Oil Co.'s No. 2 Patterson, SW cor. NW, Section 1-2s-10w, has been completed for 100 bbls. in sand 2,154-60 feet. No. 4 Burneaugh, NE cor. SE, Section 2-2s-10w, made 100 bbls. from sand 2,170-88 feet.

**Creek County**

Quackenbush and others moved a machine in for No. 1-A McIntosh, C NE NW, Section 26-18-7. H. U. Bartlett made location for No. 2 Francis, NW cor. NE, Section 20-18-9. Operators Oil Co.'s No. 1 Thompson, NE cor. SE, Section 26-16-10, is spudding. Sample & Mann's No. 1 Tucker, NW cor. SW, Section 17-19-9, has been abandoned at 2,466 feet. Comail Oil Co.'s No. 6 Pemberton, NE cor. SW NW, Section 8-17-10, made a 4-bbl. well in sand 2,780-90 feet. J. E. Martin and others' No. 1 Bruner, C SW NW, Section 27-17-13, has been completed for 12 bbls. in sand 1,991-97 feet. Empire Oil & Refining Co.'s No. 4 Bigpond, NW cor. SW NW, Section 36-15-7, made 30 bbls. in sand 2,584-2,633 feet.

**Hughes County**

Iglehart and others' No. 1 J. Canard, SE cor. NE NE, Section 28-9-10, has been completed for 14,000,000 feet of gas at 2,770 feet.

**Jefferson County**

Yingling & Farland's No. 1 Riverbed, NW cor. NE NE, Section 10-7s-5w, is cementing surface pipe. McGinley & Sigler's No. 1 Bushby, NE cor. NW SW, Section 17-7s-5w, is drilling at 800 feet. Bridewell Oil Co.'s No. 1-C Spring, NE cor. NW SW NW, Section 25-6s-6w, is pumping 10 bbls. from sand 2,116-23 feet. Carter Oil Co.'s No. 3 Seay, SE cor. NW SE SW, Section 34-6s-5w, is swabbing 10 bbls. an hour in sand 1,517-40 feet. O. R. Hart and others' No. 1 Stanfield, C W half NE SE, Section 33-7s-6w, is dry and abandoned at 1,179 feet.

**Kiowa County**

Eugene Burke's No. 1 Fox, NW cor. SW, Section 4-6-16w, has been abandoned at 746 feet.

**Latimer County**

Limestone Oil & Gas Co. has the rig up for No. 1 Murray, NE cor., Section 22-5-18.

**Lincoln County**

Magnolia Petroleum Co. moved the rig in for No. 2 Freeman, SE cor., Section 8-14-4, Chandler Pool. Shell Petroleum Corp.'s No. 1 Furst, SW cor. SE, Section 25-17-3, has been completed for 6,-000,000 feet of gas in sand 3,890-3,939 feet after being plugged back from 4,790 feet.

**McIntosh County**

Midwestern Oil & Gas Co.'s No. 1 Frazier, C NE SE, Section 36-12-18, is spudding. No. 1 B. Frazier, C SE NE, Section 36-12-18, has been completed for 2,000,000 feet of gas in sand 608-20 feet.

**Marshall County**

Flemming & Kimbrell's No. 4 R. H. Null, SW cor. NE NW, Section 24-5s-5, is drilling at 425 feet F. W. Merrick's No. 16 R. H. Null, NW cor. SE NW, Section 24-5s-5, is drilling at 100 feet. Horseman & Dennis' No. 1 Adams, SW cor. NE NE, Section 11-5s-5, has been completed for a dry hole at 590 feet. Goddard Oil Co.'s No. 1 Talifero, SE cor. SW NE, Section 14-5s-5, has been abandoned at 595 feet. Magnolia Petroleum Co.'s No. 1 West Ruthland Trust Co., SW cor. SE SE NW, Section 30-5s-6, made a 15-bbl. well in sand 633-42 feet.

**Muskogee County**

E. B. Grubbs and others' No. 1 Spaulding, SW cor. SE, Section 9-15-18, is spudding. H. L. Jolly's No. 4 T. Carlina, SE cor. SW NW SW, Section 9-15-18, is a machine. No. 5 T. Carlina, NE cor. SE NW SW, Section 9-15-18, is a machine. Western D. & E. Co.'s No. 2 L. Fields, SW cor. NE NE SW, Section 9-15-18, has set 40 feet of 10-inch casing. William La Pierre and others made location for No. 2 E. Durant, SE cor. NE NE, Section 10-15-18. E. J. Metzger and others' No. 1 Townsite, Block 365, SW cor. SE, Section 26-15-18, is spudding. L. F. Crow's No. 1 Schoonover, SW cor. NW NE SE, Section 10-13-18, is spudding. John Aggas' No. 3 M. Wheat, CNL SE SW, Section 28-16-15, is dry and abandoned at 1,540 feet. Bryan Petroleum Co.'s No. 2 Rolland, CNL SW, Section 19-16-16, is a dry hole at 1,069 feet. D. L. T. Co. and others' No. 2 L. Mackey, SW cor. SE NW SW, Section 9-15-18, has been completed for 280 bbls. in sand 1,002-16 feet. J. M. Foltz's No. 1 L. Mackey, NW cor. SW NE SW, Section 9-15-18, made 220 bbls. in sand 1,007-21 feet. Robinson Brothers' No. 5 H. Lewis, C NW NE, Section 8-13-16, has been completed for 20 bbls. in sand 1,630-40 feet. L. R. Kershaw's No. 4 Fee, NW cor. SE, Section 15-13-18, is dry and abandoned at 875 feet. E. Mills and others' No. 3 J. Freeman, CWL NE SE, Section 15-13-18. H. D. Johnston and others' No. 2 W. Lowther, NE cor. NW, Section 23-13-18, has been completed for 500,000 feet of gas in sand 581-602 feet.

**Okfuskee County**

Flynn & Morgan's No. 1 Burton, NE cor. SW SE, Section 14-13-9, is a rig on the ground. Gilcrease Oil Co.'s No. 3 Wind, NE cor. SE NE, Section 35-11-9, is spudding. Sunray Oil Co. and Shelden's No. 1 Wilson, NW cor. SW, Section 22-12-11, has been completed for 450 bbls. in Wilcox sand 3,469-81 feet. Moffett and others' No. 1-A Wilson, NE cor. SW NE, Section 26-11-11, is an old well drilling.

**Okfuskee County**

Flynn & Morgan moved the rig in for No. 1 Burton, NE cor. SW SE, Section 14-13-9. Gilcrease Oil Co.'s No. 3 Wind, NE cor. SE NE, Section 35-11-9, is spudding. Moffett and others' No. 1-A Wilson, NE cor. SW NE, Section 26-11-11, is an old well drilling deeper at 2,105 feet.

Sunray Oil Co. and Shelden's No. 1 Wilson, NW cor. SW, Section 22-12-11, has been completed for 450 bbls. in Wilcox sand 3,469-81 feet. Hazlett and others' No. 2 Johnson, CEL NE, Section 3-10-11, has been abandoned at 2,617 feet.

**Okmulgee County**

C. Peterson's No. 4 E. Ware, NE cor. NW SW, Section 9-15-14, is an old well drilling deeper at 1,900 feet. L. C. Wheeler and others' No. 3 Fish, SW cor. NE NE, Section 6-15-12, is a rig. Mechlin & Berlin's No. 9 V. Colbert, SW cor. NE NE, Section 14-14-14, has been completed for 10 bbls. in sand 1,086-94 feet. Morrison and others' No. 3 A. Burgess, NW cor. NE NW, Section 20-12-13, made an 8-bbl. well in sand 2,398-2,407 feet.

**Osage County**

Vacuum Oil Co. and others' No. 2, SW cor. NW NW, Section 23-26-6, is a cellar. The rig is being erected for No. 5, SW cor. SE SW, Section 28-26-6, Burbank Field. Peters Petroleum Corp. and others' No. 1, SE cor. NW, Section 21-23-7, is spudding. Location has been made for No. 1, CSL SW, Section 22-21-11. Vacuum Oil Co. and others' No. 5, SW cor. SE SE, Section 15-26-6, Burbank Pool, made 120 bbls. in sand 2,944-88 feet. L. G. Stanley and others' No. 1, NE cor., Section 15-26-8, is dry and abandoned at 2,440 feet. Peters Petro-

leum Corp. and others' No. 1, SW cor. SE, Section 22-25-9, has been abandoned at 2,347 feet. William D. Gray and others' No. 5, SE cor. SW SE, Section 34-24-8, made 1,000 bbls. in Siliceous lime 2,488-2,517 feet.

**Oklahoma County**

Indian Territory Illuminating Oil Co.'s No. 5 Theimer, NW cor. SW SE, Section 1-11-3w, Oklahoma City Pool, is a cellar. T. B. Slick and others made location for No. 1 Milner, SE cor. SW NW, Section 1-11-3w. Location has also been made for No. 1 Crawford, SW cor. NW, Section 1-11-3w. Indian Territory Illuminating Oil Co. made location for No. 3 Ferndale, SW cor. NE NE, Section 11-11-3w. No. 1 Eacock, NW cor. NE, Section 11-11-3w, is also a location. Location has been made for No. 1 Coppinger and others, NE cor. NW, Section 11-11-3w. Cromwell-Franklin Oil Co. has the cellar dug for No. 25 Trosper Park, SE cor. NW SW, Section 12-11-3w. No. 26 Trosper Park is also a cellar, NE cor. SW SW, Section 12-11-3w. Indian Territory Illuminating Oil Co. has the cellar dug for No. 1 Habegger, SE cor. NW, Section 14-11-3w. The cellar has also been dug for No. 2 Clarence Trosper, SW cor. NW NE, Section 14-11-3w. No. 1 Magnolia Heights, NW cor. NE NW, Section 14-11-3w, is a cellar. The cellar has been dug for No. 1 Rensimer, SW cor. NE NW, Section 14-11-3w. Indian Territory Illuminating Oil Co. and Hall & Briscoe's No. 1 Holman-Gray, NW cor. SE NW, Section 14-11-3w, is a cellar. Indian Territory Illuminating Oil Co. made location for No. 1 Carrico, SE cor. NE NW, Section 14-11-3w. Coline Oil Co. has dug the cellar for No. 8 Clauer, NE cor. SW SE, Section 25-11-3w. The cellar has also been dug for No. 9 Clauer, SW cor. SE, Section 25-11-3w. Location was made for No. 10 Clauer, NW cor. SW SE, Section 25-11-3w. Indian Territory Illuminating Oil Co. has dug the cellar for No. 3 Peterson, NE cor. SE SW, Section 25-11-3w. No. 13 Jones, SW cor. NW, Section 31-11-2w, is a location. The location was made for No. 14 Jones, SE cor. SW NW, Section 31-11-2w. No. 6 Sudik is a location, NE cor. NW SW, Section 31-11-2w. Sinclair Oil & Gas Co. has the cellar dug for No. 9 Vencl, NW cor. SW SE, Section 31-11-2w. No. 10 Vencl, NE cor. SW SE, Section 31-11-2w, is also a cellar. The cellar for No. 11 Vencl has been dug in the SW cor. SE, Section 31-11-3w. No. 12 Vencl, SE cor. SW SE, Section 31-11-2w, is also a cellar. Sinclair Oil & Gas Co. made location for No. 9 School Land No. 54, SW cor. NW NE, Section 36-11-3w. The cellar has been dug for No. 10 School Land No. 54, SE cor. NE, Section 36-11-3w. No. 11 School Land No. 54, NW cor. SE NE, Section 36-11-3w, is a cellar. No. 12 School Land No. 54, SW cor. SE NE, Section 36-11-3w, is also a cellar. The cellar has been dug for No. 2 School Land No. 67, SE cor. NE SE, Section 36-11-3w. No. 3 School Land No. 67, NW cor. NE SE, Section 36-11-3w, is also a cellar. Sinclair Oil & Gas Co. and Independent Oil & Gas Co.'s No. 1 School Land No. 69 is a cellar, NE cor. SW, Section 36-11-3w. Indian Territory Illuminating Oil Co. made location for No. 2 School Land, SE cor. NE NW, Section 36-11-3w. The Prairie Oil & Gas Co. and T. B. Slick's No. 2 Sigmon, SW cor. NW SW, Section 32-11-2w, is a rig going up.

Wirt Franklin Petroleum Corp.'s No. 1 Eacock, NE cor., ection 11-11-3w, made estimated 13,676 bbls. in sand 6,450-6,500 feet. Cromwell-Franklin Oil Co.'s No. 7 Trosper Park, SE cor. SW NW, Section 13-11-3w, has been completed for 100,000,000 feet of gas in Arbuckle lime 6,362-87 feet. Indian Territory Illuminating Oil Co.'s No. 1 C. Brokaw, SE cor. NE, Section 13-11-3w, made estimated 27,504 bbls. in Arbuckle lime 6,085-6,485 feet. No. 2 C. Brokaw, SW cor. SE NE, Section 13-11-3w, has been completed for estimated 13,506 bbls. in Arbuckle lime 6,050-6,475 feet. No. 5 Trosper, SE cor. NE SW, Section 13-11-3w, made 140 bbls. in Arbuckle lime 6,280-6,530 feet. No. 2 Canfield, NE cor. SE SW, Section 19-11-2w, has been completed for estimated 9,398 bbls. in Arbuckle lime 6,044-6,483 feet. No. 6 A. Bodine, SE cor. NE SE, Section 24-11-3w, is estimated at 9,426 bbls. at 6,475 feet. No. 3 Johnson, SE cor. NW, Section 25-11-3w, made 2,598 bbls. in sand 6,540-73 feet. Sinclair Oil & Gas Co. and Amerada Petroleum Corp.'s No. 5 Kinter, SE cor. NE SE, Section 30-11-2w, made 255 bbls. in Arbuckle lime 6,264-83 feet. No. 7 Kinter, SW cor. SE SE, Section 30-11-2w, has been completed for 710 bbls. in Detrital zone 6,220-6,392 feet. No. 8 Kinter, SE cor., Section 30-11-2w, has been completed for 245 bbls. in Arbuckle lime 6,400-10 feet. Indian Territory Illuminating Oil Co.'s No. 1 Peterson, NE cor. SW, Section 25-11-3w, has been deepened from 6,495 feet to 6,576 feet and made 5,293 bbls. Sinclair Oil & Gas Co.'s No. 2 School Land No. 54, SE cor. NE NE, Section 36-11-3w, has been completed for estimated 7,180 bbls. in sand 6,480-6,612 feet.

**Payne County**

Mulberry Oil Co.'s No. 1 Payne, SW cor. NW NE, Section 5-17-4, is rigging up to deepen. Transcontinental Oil Co.'s No. 1 Shannon, NE cor. SE SW SW, Section 24-18-4, Ripley Field, is dry and abandoned at 4,207 feet.

**Pawnee County**

Martin and others' No. 3 Cotton, NE cor. SW, Section 6-20-8, is rigging up to deepen from 2,590 feet. Geraldine Oil Co.'s No. 5 Edmiston, NW cor. SW SW, Section 30-21-9, is drilling at 400 feet. Union Oil & Mining Co. is moving a machine in for No. 1 Bayliss, NE cor. SW NE, Section 30-20-9. John Byrnes' No. 2-A Byers, NW cor. NE, Section 31-21-9, is spudding. No. 4 Edmiston, SW cor. NE SW SW, Section 30-21-9, has been completed for 25 bbls. in sand 615-20 feet. Geraldine Oil Co.'s No. 4 Edmiston, SE cor. SW NW SW, Section 30-21-9, made 20 bbls. in Layton sand 1,085-1,100 feet.

**Stephens County**

Pearce & Brown's No. 7 Wilkerson, SE cor. SW SW SE, Section 27-1s-8w, is preparing to deepen from 1,682 feet. American Pipe Line Co. has the rig up and tools in for No. 11 Nigh, NE cor. SE NW, Section 34-1s-8w. Wirt Franklin Petroleum Corp. made location for No. 1 Mullen, SE cor. NE SE, Section 9-2s-6w. No. 1 Hartley, NW cor. SW SW, Section 10-2s-6w, is also a location. Magnolia Petroleum Co. has the rig up and tools in for No. 2 Christy, SE cor. NW NW, Section 15-2s-6w. Magnolia Petroleum Co.'s No. 11 Burke, SE cor. SW NE, Section 34-1s-8w, has been abandoned at 2,240 feet. No. 1 Christy, NW cor., Section 15-2s-6w, made 220 bbls. in sand 2,846-66 feet.

**Seminole County**

Pure Oil Co. moved the rig in for No. 1 Hearn, SE cor. NE SE, Section 15-9-5, Earlsboro Field. Superior Oil Corp. and Darby Petroleum Co.'s No. 2 Noble, NW cor. SE NW, Section 15-9-6, East Earlsboro Field, is a rig on the ground. Magnolia Petroleum Co. has the rig material on the ground for No. 1 Sandefur, NW cor. NE NW, Section 30-9-6. Shell Petroleum Corp.'s No. 2-A Caesar, NE cor. SE NE, Section 11-7-6, Little River Pool, is a rig on the ground. Gypsy Oil Co. has the cellar dug for No. 1 Louisiana, NW cor. SW SE, Section 16-6-6, Konawa Pool. Independent Oil & Gas Co.'s No. 3 Okfuskee, SE cor. SW NW, Section 16-6-6, is a cellar. Carter Oil Co. and others' No. 1 C. Nelly, SW cor. NE, Section 27-8-6, is dry and abandoned at 4,432 feet in Wilcox sand. Empire Oil & Refining Co.'s No. 5 Coker, NE cor. SE SW, Section 13-7-6, Little River Pool, made 500 bbls. in Cromwell sand 3,172-3,212 feet. Magnolia Petroleum Co.'s No. 1 Wisey, SW cor. NE SW, Section 9-6-6, Konawa Pool, is a dry hole at 3,021 feet. Gypsy Oil Co.'s No. 2 Smith, NW cor., Section 18-6-8, has been completed for 860 bbls. in Wilcox sand 4,184-89 feet. The Prairie Oil & Gas Co.'s No. 4 Smith, SE cor. SW, Section 5-7-7, East Little River Pool, made 49,333,440 feet of gas in Cromwell sand 3,286-88 feet after plugging back from 4,230 feet in Wilcox sand. No. 5 Smith, SE cor. NE SW, Section 5-7-7, was completed for 240 bbls. in Cromwell sand 3,191-3,214 feet. The Prairie Oil & Gas Co. and T. B. Slick's No. 1 Harjo, NE cor. NW, Section 8-7-7, drilled to 4,270 feet in Wilcox sand, plugged back to Cromwell sand 3,301-03 feet and made 130 bbls. No. 1 Nora, SW cor. NW NE, Section 9-6-6, Konawa Pool, has been abandoned at 3,192 feet. No. 2 Tiger, SW cor. NW NE, Section 8-7-7, made 497 bbls. in Gilcrease sand 3,142-91 feet.

**Tulsa County**

Holmes & Burton's No. 1 David, SW cor. SE SE, Section 19-19-10, is rigging up.

**Wagoner County**

Keener Oil & Gas Co.'s No. 1 Sequoyah, NE cor., Section 4-18-19, is drilling at 400 feet. W. A. Dodd's No. 7 T. Atkins, SE cor. NE SE, Section 14-17-16, is dry and abandoned at 1,372 feet.

**Cimarron County**

Magnolia Petroleum Co. and Ramsey made location for No. 1 School Land, C SW NW, Section 27-5-5.

**Texas County**

Palo Duro Oil Co.'s No. 1 Groves, NE cor. SW SW, Section 23-2-18, is spudding.

**Kay County**

Wagoner Petroleum Co.'s No. 1 Hinkle, SW cor. NW NW, Section 3-26-3, is preparing to deepen from 2,430 feet. Charles Lancer's No. 1 Brooks, C SE NW, Section 29-29-1, has been completed for 280,000 feet of gas in sand 815-18 feet, total depth 990 feet.

## KANSAS FIELDS

(Continued from Page 60)

94 Koogler, SW cor. NE, Section 20-26-5, has been completed for 60 bbls. in sand 2,532-90 feet. Lario Oil & Gas Co.'s No. 1 Nixon, NW cor. SW, Section 23-27-5, has been abandoned at 2,830 feet.

**Barton County**

The Prairie Oil & Gas Co.'s No. 1 Davidson, NW cor. SE, Section 4-16-11w, has been completed in sand 3,314-40 feet, swabbing 200 bbls. in 18 hours.

**Coffey County**

Selby Oil & Gas Co.'s No. 1 Scott "B," CEL NE NE, Section 13-23-14, is dry and abandoned at 1,692 feet. Ritchey & Moore's No. 2 Tebbins, NE cor. NW NW, Section 18-23-15, is a dry hole at 1,672 feet.

**Chautauqua County**

The Prairie Oil & Gas Co.'s No. 1 Foster, NE cor. SW, Section 13-34-9, is dry and abandoned at 2,426 feet.

**Ellis County**

Mid-West Exploration Co. moved the rig in for No. 13 Austin, SE cor. NE NE, Section 36-12-16w.

**Greenwood County**

The Texas Company has built the rig for No. 1 Blanck, SW cor. NW SE, Section 29-22-13. Parrish and others made location for No. 1 Errickson, SW cor., Section 15-24-13. Simmons & Amerada Petroleum Corp.'s No. 1 Winiger, NE cor. SE, Section 27-23-11, has been abandoned at 2,060 feet.

**Harvey County**

Liggett and others' No. 1 Regier, SE cor. NW SE, Section 2-23-3w, is dry and abandoned at 3,855 feet.

**McPherson County**

W. C. McBride, Inc., moved the rig timbers in for No. 1 Whitwright, NE cor. SW, Section 30-19-1w. Dixie Oil Co.'s No. 1 Johnson, SW cor., Section 20-17-3w, has been abandoned at 3,604 feet. McPherson Oil & Gas Development Co.'s No. 1 Rudiger, C NE, Section 26-20-2w, is dry and abandoned at 3,001 feet. Slick, Pryor and Lockhart's No. 1 Stucky, SE cor. SW SW, Section 27-20-3w, has been completed for 5,500,000 feet of gas in chat 3,009-45 feet. Barnsdall Oil Co.'s No. 2 Krehbiel, SW cor. SE, Section 4-21-3w, Voshell Pool, made 1,272 bbls. from Wilcox sand 3,357-70 feet. Dixie Oil Co. and Amerada Petroleum Corp.'s No. 1 Voshell, NE cor. SE NW, Section 9-21-3w, has been abandoned at 3,571 feet. Shell Petroleum Corp.'s No. 4 Stucky, NE cor. SW SE, Section 9-21-3w, has been completed for 1,380 bbls. in Wilcox sand 3,364-71 feet. Gypsy Oil Co.'s No. 1 Stucky, SW cor. SE NW, Section 10-21-3w, is dry and abandoned at 3,534 feet in Wilcox sand. Sinclair Oil & Gas Co.'s No. 3 Voshell, NW cor. SW NW, Section 10-21-3w, made 490 bbls. in Wilcox sand 3,354-66 feet. Shell Petroleum Corp.'s No. 1 Koehn, NE cor. NW NE, Section 16-21-3w, has been completed for 710 bbls. in Wilcox sand 3,388-95 feet.

**Morris County**

Hankenson and others' rig is up for No. 1 Jones, SW cor. SE, Section 24-16-9.

**Rice County**

Tatlock and others made location for No. 1 Loesch, SW cor. NW SE, Section 22-10-10w. Derby Oil Co.'s No. 1-A Johnson, NW cor. NE SE, Section 24-20-6w, is a Wilcox sand dry hole at 3,658 feet.

**Russell County**

Day and Keys Petroleum Co.'s rig is up for No. 1 Dortland, NE cor., Section 8-14-15w. Imo Oil Co. made location for No. 1 Wandby, SE cor. NW NE, Section 7-14-14w.

**Rush County**

Milmac Oil Co. and others' No. 1 Mohr, C NW, Section 11-18-16w, has been completed for 24,000,000 feet of gas in sand 3,505-07 feet.

**Saline County**

Twin Mound Oil Co.'s No. 1 Weis, NW cor. SW NE NW, Section 20-13-4w, is cleaning out to deepen from 630 feet.

**Sedgwick County**

Continental Oil Co. and Gypsy Oil Co.'s No. 7 Reed, NE cor. SW SE, Section 1-26-1w, has been completed in Simpson sand 3,370-72 feet for 682 bbls. No. 10 Shawver, SE cor. SW NW, Section 7-26-1, made 191 bbls. in Simpson sand 3,358-60 feet. Smith & Ash and Shell Petroleum Corp.'s No. 1 Tripp, NE cor SW, Section 22-26-2, Greenwich Pool, made 55 bbls. in sand 3,309-15 feet. C. B. Davis' No. 1 Van Arsdale, SW cor. NE SE, Section 14-27-1w, is dry and abandoned at 3,587 feet.

**Stafford County**

Mid-West Exploration Co. is building the rig for No. 36 Richardson, SE cor., Section 36-22-12w. Boucher and others' No. 1 Smith, NE cor., Section 9-22-11w, is a rig under construction. Location has been made for No. 1 Christensen, NW cor., Section 22-22-11w.

**Stevens County**

Argus Gas Co. made location for No. 1 Crawford, C NE, Section 19-32-37w. Location has also been made for No. 1 Sherman, C NW, Section 33-33-37w. No. 1 Hicks, C SE, Section 12-34-39w, is also a location.

**Washington County**

McCool & Vincent's No. 1 Linn, NW cor. NE, Section 27-4-3, has been abandoned at 3,100 feet.

## OIL SHOWS IN BRAZIL

Signs of petroleum have been discovered in the Tucum and Boa Asperanca districts of Brazil. The test boring at Tucum has reached a depth of 489 meters and the well at Boa Asperanca is now down 170 meters.

**Statement of the Ownership, Management, Etc., of**
**THE OIL AND GAS JOURNAL**
**April 1, 1930**

(This statement is published in compliance with the Act of August 24, 1912.)

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JOHN M. EGAN,
General manager.

Sworn to and subscribed before me this 22nd day of March, 1930.

H. R. BARNETT,
Notary Public.

My commission expires October 3, 1933.

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(ADDITIONAL CLASSIFIED WANTS ON NEXT PAGE)

# Chicago Gasoline Market Improving

## Slowly Increasing Strength in Motor Fuel and Kerosene but Quiet and Rather Easy Market in Fuel Oils

By J. B. Waldo

CHICAGO, Apr. 7.—High, drying winds are very rapidly improving the conditions of the roads in the area covered by the recent blizzard. The consumption of gasoline is now back to nearly its former level. There is no complaint regarding the receipt of shipping instructions on contracts, a considerable number having been received this morning. The spot market is not active but is expected to improve later in the week as the jobbers check their stocks after the business of the last week end and prepare for another to follow. The price situation was very firm, leading refiners holding for 6¾ cents Group 3 for U. S. Motor gasoline and some smaller refiners selling at 6½ cents. A few cars were picked up in this market this morning for 6¾ cents, but they were the remainders of March purchases and were only sold where immediate instructions could be given. The higher gravities were also quiet and some material was to be had for immediate delivery at prices below the going market. These odds and ends must be just about closed out now. The light spot demand has made the surplus of March buying last longer than it would otherwise.

Kerosene is a little more active and firmly held at unchanged prices. Reports from the farming districts state that the tractors are now running long hours in all sections. There were a number of inquiries for prime white distillate with a low flash for use as tractor fuel and some quotations were made of 3½ cents. The inquiries for other kinds of domestic burner oil were few and the demand light. Industrial fuel oils were inquired for sparingly this morning and the new business in sight was not great. Prices were barely steady with buyers very bearish in their views of the price which they were willing to pay. In a general way the trade looks for slowly increasing strength in gasoline and kerosene but for a quiet and rather easy market for domestic and industrial fuel oils.

### Storm Checked Gain

That heavy snowfall and accompanying bad weather over this territory certainly upset the plans of the distributors in more ways than one. In the first place it spoiled the record for March for distribution over this territory. Some of the largest distributors with outlets in all parts of the territory find that the increase which they showed up to the week of the storm, have been just about cut in half and instead of 20 per cent or more increase they will show say around 12 per cent. In some of the localities where the snow was deepest, all the gains of the first three weeks were wiped out by the storm period. In the country districts the trade is still feeling the effects of the storm chiefly in very bad roads for so much water was present that the graveled and oiled roads were undermined and are just as bad as the old fashioned dirt farm roads which are still in many localities impassable to the tank trucks. Oil men say they have a great many phone calls for deliveries of motor fuel, kerosene or lubs but that it is impossible to get to their customers or for their customers to come to their stations.

As a result of this decrease in the consumption many jobbers in this territory find themselves oversupplied with gasoline. Quite a number have stated they had cars coming in for which they had no room. As a rule the larger jobbers were well stocked with gasoline at the close of March, so well supplied they do not expect to order more gasoline until the latter part of the month. Much will depend on the kind of weather but as April is usually a better month for motoring, the probability is there will be a considerable increase in the gallonage of these jobbers, and they may need additional supplies sooner than they expect. In a general way the ordering is being done by the smaller jobbers who have but limited storage and must order frequently.

### Rather Free Selling

There was some rather free selling of gasoline by various refiners during the last week in March. Quite a number, for some reason or other, wanted to reduce their stocks of gasoline to approximately the same volume as they had in storage a year ago and while this gasoline so sold is understood to be for immediate shipment, at the same time some of it will not be rushed out but will reach its destination during the first ten days of this month. The outlook for the spot market as regards demand is for a rather limited business for the first part of the month. The contract movement is more uniform but jobbers are not as prompt, in a great many instances, to give shipping instructions as they were a month ago as they need a little more time to move what has backed up on them as the result of the recent unexpected decrease in their sales. There is another thing that is causing quite a number of the distributors to do less purchasing than they otherwise would be doing, and that is poor collections. This is a perennial complaint in the jobbing business. We hear it always but these complaints are louder and more general this spring than for some seasons. One jobber stated he was insisting on his customers who wanted credit, signing a note with 6 per cent interest for their requirements. Another jobber close to this city stated he could double his sales if he would sell on credit but he had found it necessary to sell for cash and he was content to do a smaller business and get paid for what he sold.

### Antiknock Sales

The demand is now very generally for the U. S. Motor grade and for the antiknock gasolines. These latter kinds are, with many jobbers, taking the place of their higher gravities and must be cutting into the sale of even the U. S. Motor grade. Refiner after refiner is taking out a license to blend Ethyl Gasoline not so much because there is any great profit in the business, as because their trade demand it. This widespread demand for the antiknock gasolines is bound to have its effect on the refinery output both in the quality of the gasoline refined and in the percentages of the various gravities which will be run.

### Market Advances

The major refiners are continuing to advance their spot market for U. S. Motor gasoline. The advance is being made slowly but steadily. At the close of last week, the market for U. S. Motor gasoline in Group 3, was 6¾ cents with the major refiners. A few of the smaller operators were selling to the trade direct at 6½ cents for immediate shipment. A little material for resale was available at 6¾ cents in Oklahoma and at a little less from the North Texas refiners. Practically no gasoline could be bought in West Texas. Some gasoline which however was not full Navy specifications and would not pass the doctor test but does have a good antiknock value was to be had out of Louisiana at 6¼ cents. The hangovers from March purchases have been closed out or cancelled out, but early in last week, gasoline was to be had from these purchases in transit, at 6 to 6⅛ cents and some small sales were made to close out a purchase at 5⅞ cents. The market closed the week firm at 6½ to 6¾ cents for U. S. Motor gasoline out of Group 3. These prices could be shaded from special delivery points.

In the localities where local refiners are competing with the distant plants in the Mid-Continent Field or elsewhere, prices are on a different basis, at least for the time being. In Chicago gasoline was being sold at 8¼ cents delivered which would compare with 6 cents Group 3, and in Detroit, one of the most fiercely competitive points in the country owing to a combination of circumstances, it was selling at 8¾ cents delivered, according to jobbers who had bought, which would compare with .0506 cents Group 3, and in many localities such conditions prevail and will continue to prevail until the consumption so increases that it will absorb all of the local offerings and oblige the buyers to turn to more distant refineries for at least a portion of their supplies of gasoline. This condition is less and less likely to arise as each season witnesses a further development of the refining capacity of these local refining centers. Prices quoted for Chicago delivery by the near-in refineries are not available for shipment to any considerable portion of this territory being practically only for Chicago and its switching district.

### Natural Gasoline

One of the strengthening features of the present situation is the higher prices asked for natural gasoline. With more gasoline being run this demand should further increase. There is a very considerable amount of blending of natural gasoline with naphthas largely from West Texas crude which have a good benzol equivalent. Quite recently a sale of 50 cars of naphtha was made to one jobber in a near city. He would blend with this naphtha from time to time probably a total of 15 to 20 cars of natural gasoline giving him a total of 65 to 70 cars of motor fuel. One reason given by some jobbers why they use the naphtha blends is that there is practically no waste from evaporation. The higher gravities have done little. There is some demand for the 60-62 gravity with both the 400 and the 437 endpoint but the 64-66 gravity is in light demand and while prices are advanced by the major refiners for both these grades the advance is purely nominal. While the Chicago market for U. S. Motor gasoline has only advanced one-quarter of a cent, judging by the prices made by major refiners, the real spot market is nearly a full cent higher than it was at the opening of March when the general quotation in the open market here was 5¾ cents Group 3, and some sales were made as low as 5⅝ cents. There is practically no export inquiry here of late, at most a few cars may be sought at times to complete a cargo.

### Kerosene Demand Uneven

Kerosene continues to be strongly held although the demand is uneven and not very large. According to reports from many sections the spring work on the farms is well under way and up to that of an average season as to the amount of work done. There has been considerable light distillate, usually a prime white, sold to jobbers for distribution as tractor fuel. Some blend this with a little lighter material gasoline or kerosene to give a snappier fuel. The cost of this distillate is about a cent a gallon less than that of 41-43 kerosene and the claim is often made that a good distillate with a low flash, say 175 degrees or less, really makes a more powerful fuel than kerosene. The market here ranges from 4¼ to 4½ cents for a 41-43 water white kerosene.

There has been little activity in furnace oils of all kinds. The season is very nearly at the close and most distributors are as much interested in drawing down their stocks to the lowest possible point as in making sales. But they must take care of the needs of their regular customers and at times this obliges them to purchase a single car of some one or more of the regular grades of domestic furnace oils. There has been little change in prices. There are some stocks which the holders would like to move but they know that at this time price reductions would not make the offer any more attractive and result in an increase in the amount of the order. The only exception is in the prime white distillate which is being used for tractor fuel and for which there is some demand with very little material to be found. The price for this grade would not be less than 3¼ cents with good distillate of a darker color to be had at 2¾ to 3 cents. Zero gas oils are easy to buy but not in good demand at 2¾ cents for a clean, low flash oil. The lighter gravities of fuel oils being available for cracking material, if not already cracked, have a double demand but most of the lighter zero fuel oils are the product of the cracking stills. The demand for these seems to hang on better than for other kinds of domestic burner oil but even this is a little easier, some refiners during the week having reduced their quotations 2½ cents a barrel.

The straightrun gas oil has been in light demand. Judging by the purchases of gas oil some of the gas companies have not sold more than 60 per cent of the gas they do in the average season. Lack of industrial demand is given as the reason for this falling off but little colder weather is partly responsible. In addition to those who heat their homes entirely with gas, many use gas as a sort of auxiliary heat in the very cold weather. There has been little need of this additional heat and the business of the gas companies has reflected both the warmer weather and the lack of industrial activity. From now on there will be more cracking of gas oil as the gasoline requirements increase and, should

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## Classified Wants

(Continued from Preceding Page)

**OIL INDUSTRY PRINTING**

**OIL FIELD LEGAL BLANKS**
Leases, assignments, releases, township plat books, well records, etc. Request on your letterhead gets free catalog. Olds Press, 215 East Third St., Tulsa, Okla.

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TO CLOSE estate will sell 11 and 24 thousand acre ranches. Winter and summer range, running water, lots grass, fish and hunters paradise. Mountains of New Mexico. Quick action necessary. 503 Cavalier Apts., Kansas City, Mo.

# Gasoline Market Firmer in the East

## General Structure on Sounder Basis Than for Some Months. Posted Price Now Seems to Be Going Market in Most Sales

By A. E. Mockler

*New York Bureau, The Oil and Gas Journal, Rooms 1919-21, No. 15¢ Nassau Street*

NEW YORK, Apr. 7.—Gasoline markets have firmed up again in the East this week, and the general market structure is on a sounder basis than for some months back. While the principal sellers have not yet advanced their posted price, which remains at 8½ cents per gallon for U. S. Motor in tank car lots, the market has shown real improvement in the advances put into effect by many of the other sellers in this area. A month ago, business was being freely done at a half to three-quarters of a cent per gallon under the posted price, but this situation has now been largely corrected and the posted price appears to be the "going" market in most sales.

Another marked constructive development, which does not appear on the surface of the market, has been the improvement registered in trading in so-called "resale" gasoline. This gasoline, in cargo lots and less, had been available in liberal volume at substantial discounts from the posted price level but it appears this week that this stock, which was of course in reality distressed gasoline, has been pretty well absorbed, and that the weaker sellers have strengthened their position to the point where they are able to market their current output at, or close to, posted levels.

While the only evident improvement in refined products markets thus far has been in gasoline, the undertone in other markets, notably fuel oil, kerosene and Diesel oil, is measurably improved. Continuance of the refinery curtailment move, in conjunction with the various projects now going forward for further crude output restrictions, augurs well for the future of the market, and present indications are that the refined products market in the East will go into the summer season in sounder position than for a year or more past.

Earning statements of various independent integrated companies covering 1929 operations are generally of decidedly constructive character, and have done much to improve market sentiment. Conditions in the industry during the past year were far from ideal, and the favorable earnings reports of most companies indicate that important economies in operation have been effected. These economies, presumably, will be still further developed during the current year, and should do much to offset the unfavorable aspects of the spot markets.

### Tank Car Gasoline

Shell Eastern advanced U. S. Motor another quarter-cent per gallon during the week, and is now quoting 9 cents at terminals. This is an advance of a full cent per gallon by this seller since the inauguration of the refinery curtailment program last month, and Shell, which at the start of March was a half-cent under the posted price for this area, is now a half-cent over that figure. The Shell price has been met by Richland, Warner-Quinlan and Carson. A number of other sellers are quoting 8¾ cents per gallon, but it is understood that 8½ cents is being generally done in competitive selling.

There has been further improvement in gasoline consumption in this area during the week. Weather conditions have been favorable, and tank car shipments have shown an encouraging increase during the period. Jobbers are now ordering forward shipments with confidence and are showing a general inclination to keep their storage full. This is a reflection of both the start of the spring motoring season and the general expectancy of a higher refinery market here.

Reports from leading marketing interests here indicate that sales of premium gasolines are steadily increasing and that the proportion of sales of U. S. Motor to premium motor fuels is steadily shifting in favor of the latter. Refiners and marketers have naturally been concentrating their selling pressure on the premium grades, which are not susceptible to price cutting, and which furnish more talking points, and these efforts are producing satisfactory results.

### Tank Wagon Gasoline

A number of minor price changes have developed, but nothing in the form of a general realignment of quotations. Marketers are bringing their quotations up to uniform levels in stated territories, and this would indicate the possibility of an early advance in both tank wagon and service station prices.

With the East Coast area experiencing favorable weather during the better part of the week, tank wagon sales have shown satisfactory gains and replacement buying is becoming more general. Many retails distributors who for the past few months have been filling but one-third to one-half of their tankage at a time are now again "filling 'em up," all of which is conducive of more smiles in the tank wagon marketing departments of the various companies operating in this area.

Competition in retail marketing is still keen. The principal companies in this area appear to have lined up their marketing facilities rather well, and it appears that this summer's "battle" will be waged in the form of newspaper advertisements extolling the virtues of this, that, or the other "gas." There has been an extensive program of retail-dealer acquisitions by the large companies in the East during the past several months, millions of dollars having been expended in the acquisition of bulk terminals and retail stations from independent operators.

### Kerosene

The refinery market is without important change this week. Tank car sales have held up moderately well, although the milder weather has made for some falling off in movement. Jobbers are again down to a hand-to-mouth basis in their kerosene purchases and few of them are keeping their storage at anything near capacity. Prices have steadied somewhat, and the posted level of 7¾ cents per gallon appears pretty well established.

Tank wagon markets for kerosene are without change. Demand is seasonably active, with marketers looking for a good spring and summer business. The coming month normally marks the start of buying of this fuel from the summer resort sections.

### Lubs

Dark bright stocks are available at 46 cents per gallon in barrels here, but trading is still light. Bright stocks, light, are steady at 48 cents, under slack buying. On 600 steam refined a little shading has been reported, but for good filterable stock it does not appear that the quoted price of 31 cents per gallon can be beaten.

Pennsylvania refiners appear to be showing somewhat stronger price views, and some reports are heard of fractional advances in asking prices. Demand, however, has not been sufficiently active to test out the cylinder oil market, and under the circumstances the market can hardly be characterized as other than nominal.

Pale and red oils are unchanged in price, but demand has picked up further and there is a good movement to both the domestic and the export trades.

### Fuel Oil

Bunker "C" is steady at $1.05, at terminals, and sales are well maintained. Feeling in the market is much better as a result of the firmer tone at the Gulf and the falling-off in California fuel oil shipments has also served as a constructive factor.

Marine business is more than holding its own in comparison with 1929 sales totals, it is reported, and refiners are rather optimistic concerning the outlook for the balance of the year. South American fuel oil is becoming an increasingly important factor, and the trend in this direction is expected to become more marked.

### Gas Oil

A slight easing off in demand for this oil is reported this week. Refiners continue to quote 28 plus gas oil at 5¼ cents per gallon, with some sellers offering down to 4¾ cents, and the average market price on actual business around 5 cents per gallon.

Manufactured gas companies have slackened their contract withdrawals somewhat, and it is expected that consumption will drop off shortly with the inauguration of daylight saving at the end of the current month.

Refinery holdings of gas oil in this area are not excessive, and the statistical position of the market is fairly sound.

### Diesel Oil

First quarter's sales of Diesel oil are reported to have shown a substantial increase over those for the corresponding period of 1929, and current volume is well maintained. The market is steady at $2 per barrel at refinery terminals.

Marine interests are drawing Diesel oil against contract in a large way, and this class of business is running well in excess of that for last year at this time. Diesel oil stocks are not large in the East, and the market undertone is definitely stronger.

### Paraffin Wax

The market has taken a turn for the better this week with crude scale, 122-124 a.m.p. up a quarter-cent at 2¾ cents per pound, sales having been made at that figure.

Fully refined has not shown any price changes, but the market appears on the verge of a fractional upturn, and offerings at quoted levels are not large. A number of refiners are reported to have booked their output for the entire second quarter of the year on the basis of current levels.

Domestic consumers have permitted their inventories to run close to bedrock during the hand-to-mouth campaign of the first quarter, and these buyers are now back in the market for supplies of wax in sizable volume.

### Export Markets

While no new business is reported at the Gulf this week, considerable interest has developed and it is believed that the closing of several cargoes of gasoline for shipment to the United Kingdom is but a matter of days. One cargo on which export operators are now figuring is of 8,000 to 10,000 tons of gasoline for early shipment, with another term order, involving four or five cargoes, also under consideration.

There has been relatively little activity in the open market for kerosene at the Gulf, but the market remains in firm position with a moderate movement on contract.

Bunker fuel oil is firm at 72 cents per barrel in cargo lots at the Gulf, but trading in this oil has been rather quiet throughout the week.

No additional fixtures of California gasoline for shipment to European markets have been reported during the week, and the market appears a little steadier, although no actual price advances have been noted.

With domestic markets showing a strengthening tone in response to the improved statistical position of the market, export operators are watching the price trend with close interest. There have been many rumors in circulation regarding the probability of an advance in the export gasoline quotation at the Gulf, but it is not thought that immediate action will be taken in that direction by the companies affiliated with the export association. Sir Henri Deterding is expected here within the next fortnight and it is possible that no action on export prices will be taken until American leaders have had an opportunity to talk over the situation in foreign markets with the Royal Dutch-Shell chairman.

### Petroleum Exports

The following table shows principal exports of refined petroleum products from New York for the past three weeks (all figures in gallons unless otherwise noted):

| | Week ended | | |
|---|---|---|---|
| | Mar. 29 | Mar. 22 | Mar. 15 |
| Gasoline | 443,000 | 470,000 | 325,000 |
| Naphtha | 290,000 | 787,000 | 710,000 |
| Kerosene | 46,000 | 78,000 | 125,000 |
| Fuel oil | 16,000 | 13,000 | ..... |
| Lubricating oil | 1,632,000 | 2,485,000 | 2,790,000 |
| Petroleum, refined | 865,000 | 690,000 | 1,920,000 |
| | Pounds | | |
| Petrolatum | 32,000 | 15,000 | ..... |
| Paraffin wax | 780,000 | 1,590,000 | 730,000 |
| Refined | ..... | 25,000 | 12,000 |
| Scale | 685,000 | 395,000 | 630,000 |
| Lubricating grease | 1,235,000 | 2,291,000 | 1,598,000 |

New business in eastern export markets has not run into large totals during the week, although there has been a fair movement against orders previously booked.

### Imports

Imports of crude and refined petroleum at the principal United States ports for the week ended March 29 totaled 1,891,000 bbls., a daily average of 270,143 bbls., compared with 1,366,000 bbls., or 195,143 bbls. per day for the previous week, and a daily average of 255,607 bbls. for the four weeks ended March 29. Details follow:

| | Bbls. of 42 gals. |
|---|---|
| At Atlantic Coast ports— | |
| Baltimore | 358,000 |
| New York | 987,000 |
| Philadelphia | 251,000 |
| Others | 143,000 |
| Total | 1,739,000 |
| Daily average | 248,429 |
| At Gulf Coast ports— | |
| Galveston district | 64,000 |
| New Orleans and Baton Rouge | 88,000 |
| Total | 152,000 |
| Daily average | 21,714 |
| At all United States ports— | |
| Total | 1,891,000 |
| Daily average | 270,143 |
| Daily average four weeks | 255,607 |

Distribution of total imports is as follows:

| | |
|---|---|
| Crude | 1,229,000 |
| Gasoline | 401,000 |
| Gas oil | 44,000 |
| Fuel oil | 217,000 |

### California Oil Receipts

Receipts of California crude and refined petroleum at Atlantic and Gulf Coast ports for the week ended March 29 totaled 459,000 bbls., a daily average of 65,571 bbls., compared with 511,000 bbls., a daily average of 73,000 bbls. for the previous week and a daily average of

66,321 bbls. for the four weeks ended March 29. Details follow:

| | Bbls. of 42 gals. |
|---|---|
| At Atlantic Coast ports— | |
| Baltimore | 146,000 |
| Boston | 95,000 |
| New York | 100,000 |
| Others | 118,000 |
| Total | 459,000 |
| Daily average | 65,571 |
| At Gulf Coast ports— | |
| All ports | None |
| At Atlantic and Gulf Coast ports— | |
| Total | 459,000 |
| Daily average | 65,571 |
| Daily average four weeks | 66,321 |

Distribution of total California oil receipts is as follows:

| | |
|---|---|
| Gasoline | 439,000 |
| Kerosene distillate | 20,000 |

Shipments of refined products from California for the East Coast and Gulf during the week (with ownership of tanker moving the oil where an oil company is the owner) were as follows:

To New York—78,300 bbls. of gasoline on the Meton, and 81,800 bbls. of gasoline on the Cities Service Oklahoma (Cities Service Co.).

To Philadelphia—58,000 bbls. of gasoline on the J. W. Van Dyke (Atlantic Refining Co.).

To Norfolk—72,000 bbls. of gasoline on the New Jersey (The Texas Company).

To Port Arthur—56,300 bbls. of gas oil on the Texas (The Texas Company).

## CHICAGO GASOLINE MARKET IMPROVING

(Continued from Page 160)

crude prices advance the crackers would be put to still greater use. The gas companies are largely drawing on stocks at present. In some states taxes are paid on the inventories as of April 31, and many companies in these states, one of which is Wisconsin, are reducing their stocks to be ready for the tax collector. In Illinois personal property taxes are paid on the amount of property in the possession of any company or individual on April 30. This may have something to do with retarding purchases, much depending on the locality and the possible tax levied against merchandise in the possession of any one.

Industrial fuels are a little more active but no stronger in prices. Some buyers have an idea that the right price is just about 5 cents below the cost of the oil at the refineries. This makes it difficult to do any really satisfactory business. Some buyers on contracts have decreased the quantity to be taken and some are holding up shipments indefinitely. There is a considerable quantity of oil that the dealers thought was sold which they now find on their hands which will probably be taken out sometime but just when is the question.

Some sizeable contracts for both gas and for heavy fuel oil are in the process of being renewed and in the meantime these concerns are buying what they need pending the signing of a new agreement. in the spot market. In a general way there is a fair movement but the business is still disappointing in its total sales.

Prices have been gradually easing off a little here and there. Some refiners have reduced their prices regularly and occasional offerings have been made of limited quantities of oil at considerable reductions in price. Some of these offers would have been very desirable had there been an assurance of a continued supply of the same grade at the price quoted. Good zero, low sulphur heavy fuel oil ranging from 12 to 22 gravity can be bought at a range of 60 to 65 cents for resale and some less desirable oil usually having a larger percentage of sulphur can be bought as low as 55 cents. Refugio crude is gone from this market for good. The new price of 75 cents at the wells plus gathering charges and differential makes the cost $1.01 Group 3 so that the dealers are reluctantly obliged to look nearer home for something to take its place and so far without success.

### Lub Demand Active

The demand for motor oils is active right now and compounders are drawing on refiners for supplies of refinery stocks in tank car lots. Western stocks are firmly held. The present price of 37 cents for bright stocks is very close to the price of the same grade in the Pennsylvania Field.

There have been no changes in the tank wagon scale of any note. Many inquiries are received from country jobbers and some refiners regarding a probable tank wagon advance but that will almost certainly be deferred until there has been a further improvement in the refinery markets and in all probability until there has been some readjustment in the prices of Mid-Continent crude. With better weather the gallonage is returning to the volume that it enjoyed before the recent blizzard in this territory.

## ROCKY MOUNTAIN AREA

(Continued from Page 68)

which will be marketed in that territory along with its other products. Southern Union Gas Co.'s No. 3 Garland, NE NE, Section 11-28-11, Kutz Canyon, which was completed at 1,960 feet, increased its gas flow after blowing for a while and is making around 2,000,000 feet a day. Five locations have been made and the rotary used in drilling this well will be moved about a mile to the southeast. The Dorothy Oil Co.'s No. 2 Goede, NW SE, Section 29-30-9, Blanco area, has resumed drilling and is below 1,100 feet.

### Valencia County

The Acme Development Co.'s No. 1 Santa Fe, SW NW, Section 27-7n-4w, is drilling at 4,645 feet. The 5⅜-inch was underreamed and lowered from 4,070 to 4,480 feet to make a water shutoff.

### McKinley County

The Walker Dome Oil Co. is moving in for a test on Section 12-15n-10w, Walker Dome. The surface formation is Mancos and the objective is the Dakota, which outcrops 6 miles away. J. W. Halsell and others' No. 1 Santa Fe, SW SW Section 17-18-9w, is lowering the 5⅜-inch to bottom at 3,200 feet to shut off more water.

### Torrance County

The Gary Oil Co.'s No. 1 State, NE cor., Section 16-8n-10e, is drilling at 2,035 feet in the upper Pennsylvanian.

### Socorro County

Lockhart & Co.'s No. 2 Stackhouse, SE SW, Section 14-3s-6e, is drilling at 2,275 feet.

### COLORADO

Several tests to the Pennsylvanian formation in areas in Colorado where that horizon has never been drilled are under consideration by the operators and at least two of these are reasonably certain and two others are among the possibilities. However, the parties concerned are not yet ready to announce their locations. One of these will be on a structure in Moffat County where the formations productive at Moffat and Iles are eroded and the Pennsylvanian can be reached at a comparatively shallow depth. Another tentative location is east of the foothills of the mountain range north of the old Boulder Field where the lower beds are close to the surface. A third is in the negotiation stage and the outcome depends upon the ability of the parties directly concerned to reach an agreement. The fourth possibility is another attempt to reach the Pennsylvanian on the Meeker Dome in Rio Blanco County. The Marland Oil Co. started a Pennsylvania test on the Meeker Dome in its No. 1 Scott, NE SW, Section 20-1n-96, in 1924, but at 1,990 feet, in the contact between the red beds and the Pennsylvania, an enormous flow of water was encountered and after numerous unsuccessful attempts to shut off the water, the hole was abandoned and leases surrendered. It is reported that these leases have been reassembled and an option on them given to one of the major companies to run until August 1. Before that date the company is expected to conclude extensive geological work in that area.

The eastern half of Colorado from the mountain range on the west and from Wyoming on the north to New Mexico on the south is receiving considerable attention and extensive geological and geophysical work is being done in that area. This immense territory is covered with overlays of recent depositions and the structures believed to exist are hidden. Some of the formations, where these are exposed, and which are accepted as reliable markers in some districts, are considered deceptive in eastern Colorado and much remains to be learned regarding them. The situation may be compared to southeastern New Mexico four or five years ago when it was believed that the area had possibilities, but that extensive wildcatting would have to take place before the highs could be located. The result is that the acreage being taken is leased for long periods at low rentals without drilling clauses. A year or two ago several of the major companies began taking commercial leases on the broad theory that somewhere in that region oil will be found. News of these activities reached the public through newspaper stories and the landowners enlarged their visions as to values. The outcome was that most of these companies called off their land men because the prices were boosted beyond what that type of lease was considered worth and the farmers lost through having their sight too high. The starting of a test by the Indian Territory Illuminating Oil Co. on the Fort Morgan anticline in Morgan County was a signal for more publicity of this kind, but so far it appears that the farmers learned their lesson two years ago and are going on the theory that one bird in the hand is worth two in the bush. In other words, they are looking more favorably upon a long-time lease that brings in small rentals than no lease at all. While a play in eastern Colorado is undoubtedly in the making, it probably will be several years before it reaches any considerable proportions and the best bet for the farmer appears to be to accept small rentals now as a certainty rather than to risk the uncertainties of the future.

### Rio Blanco County

The White Eagle Oil & Refining Co.'s No. 1-A Fordham, NW cor. SW, Section 9-2s-96, on the Picenace Creek Dome, after landing the 8¼-inch casing at 3,028 feet, was deepened to 3,300 feet. A large flow of new gas from sandy shale came into the hole and the heavy pressure has made it almost impossible to make further progress in that size hole. It has been decided to run the 6¼-inch to reduce the gas pressure and shut off cavy ground. This test, which is entirely in the Green River formation of Tertiary age, has been showing gas almost all the way down from around 1,400 feet. It has not yet reached the objective sand which shows oil saturation at the outcrop. However, the gas, which was comparatively dry at first has been getting wetter with depth and the well is looked upon as a most promising wildcat. The gas already is considered commercial and it is reported that the company has been offered a contract for the production. The only other wildcat drilling in this county is the Texas Production Co.'s No. 1 Potter, C NE SW, Section 30-2n-96, White River Dome, which is bottomed at 5,888 feet and was cored 2 feet the past week to 5,890 feet.

### Moffat County

The Midwest Refining Co.'s No. 24 Hannewalt, SE SE, Section 4-6n-92, Bell Rock structure, is drilling at 1,915 feet after cementing the 13-inch at 1,815 feet. The same company's No. 19-SD Parkinson, SW NE, Section 22-4n-92, Iles Dome, is drilling at 2,860 feet with 2,700 feet of water in the hole, presumably from the Dakota. The 10-inch is at 2,823 feet. The Texas Production Co.'s No. 1 Berlin, SW NE, Section 19-12n-100, Bartram Dome, has succeeded in freeing the 6¼-inch casing which parted three joints from bottom and is pulling the string. The total depth remains at 2,337 feet. The Mountain Fuel Supply Co.'s No. 1 Lasher, NE NE, Section 25-12n-101, is drilling at 2,110 feet and showing 1,000,000 feet of gas per day in a Tertiary sand which carried water in other tests in that locality.

### La Plata County

The McGarr Petroleum Co.'s No. 1, SE NE, Section 27-33-12, Red Mesa terrace, which Associated Press dispatches last week reported showing gas, but which generally was accepted with reservations, was visited by an engineer from the United States Geological Survey and it is understood he found the first reports to be exaggerated. The hole is bottomed at 736 feet and is full of water. There was sufficient gas to cause the water to bubble. This well was started in 1928 by the Royal Producers & Royalty Co. and was taken over recently by the McGarr Company.

### Montezuma County

Citizens of Cortez have completed the organization of the Cortez Drilling Co. which is being financed by subscriptions to put down a test in the town which will go to the La Plata sands at 1,200 to 1,400 feet.

### Huerfano County

The Parker Club, Inc.'s No. 1 fee, Section 4-28s-68, is bottomed at 4,115 feet in the top of the Lakota and swedging the parted 6¼-inch casing.

### Fremont County

The Continental Oil Co.'s No. 2 Harding, NE SW, Section 21-18-70, in the Orchard Park district north of Canon City, which was started as a sand test, is shut down for orders at 2,530 feet. The Dakota sand at this depth contained water. The Vogel-Raddatz Corp.'s No. 23 Travis, SE NE SW, Section 28-20-69, south extension of the Florence Pool, was dry and abandoned at 2,800 feet, and the same company's No. 24 Travis, SE NW NE, Section 28-20-69, is spudding. The company has a number of good producers in this district and has made a profitable operation out of its shale wells. The Continental Oil Co.'s No. 4 San Isabel, NW SW, Section 22-20-69, in the south extension, is a new location and is moving in machine. The Anderson Oil Co.'s No. 3 Beltramo, SW SW, Section 1-19-70, Four Mile district, is drilling at 1,080 feet. The company has two producers on this tract and another on the Constantino tract in SW NE, Section 3-19-70.

### Bent County

The Continental Oil Co.'s No. 1 Pipe Springs, NE cor. SE, Section 27-27-49, is drilling at 5,738 feet in hard gray lime.

### Lincoln County

The Kelly Oil Co.'s No. 1 State, SE NW, Section 36-14-57, is shut down at 3,350 feet to install new boiler.

### Arapahoe County

The McDeb Drilling Co.'s No. 1 Fitzsimmons, Section 7-4s-66, is sidetracking casing at 4,935 feet and carrying the new string of 6¼-inch at 4,920 feet. Total depth is 5,090 feet. Fast time in sidetracking has been made. It started at 3,990 feet about March 1.

### Yuma County

The Phillips Petroleum Co.'s No. 1 Andrews, NW NW, Section 3-2s-42, Rosencrantz structure, has recovered the string of fishing tools and expects to have the drilling tols out shortly. The hole is bottomed at 5,055 feet and has 3,000 feet of salt water in it. This water is supposed to be coming from sandy shale at 4,850 feet. The cuttings from the well are being examined at the Bartlesville laboratory and the identity of the horizon is not definitely known here, but it is believed to be near the top of the Mississippian.

### Weld County

The Platte Valley Petroleum Co.'s No. 1 Patterson, SW SW, Section 24-6n-61, Greasewood Dome, is drilling below 5,048 feet. The Dakota is expected at 5,200 to 5,300 feet.

### Larimer County

The Continental Oil Co.'s No. 5 Scott, NE NW, Section 6-9n-68, Wellington Dome, is bottomed at 3,451 feet and lowering the 8¼-inch.

### UTAH

The Midwest Refining Co.'s No. 31 Pary, SW cor. SE, Section 14-39s-1w,

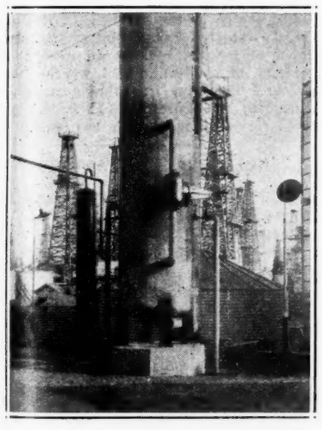
(Continued on Page 172)

# Natural Gasoline Manufacture

## Method of Handling Absorption Oils Adds To Plant Efficiency

LOS ANGELES, Calif., Apr. 5.—The Gilmore Oil Co., operating four natural gasoline plants in the Long Beach Field, has recently perfected a new improved method of handling absorption oil which greatly increases the efficiency of natural gasoline plant operation and removes a number of objectionable features. The installation of this new equipment and the method employed is not generally known as most of the equipment used was fabricated, assembled and erected by the Gilmore's engineering department. The process in question consists of a continuous automatic control which operates direct from the system permitting purification of the absorption medium and the maintenance of a high rate of circulation. The equipment consists of an evaporator, dewatering tank, small fire still, cooling tower, oil storage tank, a specially constructed pump and some other minor apparatus.

The absorption oil first enters the evaporator where the light desirable fractions are vaporized off and the heavy undesirable factors removed by being bled off from the base of the evaporator. From the evaporator, the liquid moves to a fire still, then back to the evaporator, thence to the cooling tower and back to a dewatering tank or separator, at which point the oil is converted to storage and the water vapors conveyed back to be condensed in the cooling tower. The pumping unit is so constructed that it eliminates the necessity of using a heat exchanger, thus avoiding the difficulty experienced many times in pumping hot oil.



*View of purifying unit at plant No. 1, Long Beach Field, of the Gilmore Oil Co. The evaporator is shown in the foreground and the dewatering tank to the left. The iron tanks in the background are for storage of water and clarified absorption oil.*

This is accomplished by partially bypassing the oil around the pump. In other words, the hot oil instead of passing through the pump is moved from the evaporator to the retort by a surging motion. The small quantity of oil charged to the fire still, about 3,000 gallons daily, does not require much fuel as it is only necessary to keep a small flame. Several other methods are being used in California which have for their objective the purification of absorption oil and increased efficiency of operation and this work is becoming of more importance as time goes on. Both steam and fire distillation processes are employed, the for-

(Continued on Page 177)

## SUBSTANTIAL INCREASE IN NATURAL GASOLINE OUTPUT DURING FEBRUARY

Daily natural gasoline production in February was 7 per cent greater than in January and 14 per cent greater than in February of last year, according to the latest report of the Bureau of Mines. Stocks of natural gasoline held at plants on February 28, amounted to 24,033,000 gallons, a decline from the previous month of 1,638,000 gallons. The utilization of natural gasoline in blending at the plants recorded another material decrease and amounted to only 851,000 gallons as compared with 1,307,000 gallons in January.

Texas and California increases account for most of the gain in February over January. The daily average production in Texas in February was 1,310,700 gallons and 1,200,000 gallons in January, a gain of 110,700 gallons. California production increased from a daily average of 2,258,000 gallons in February to 2,460,700 gallons in January. Thus these two States combined accounted for 313,400 gallons of a total gain of 400,000 gallons daily in February.

The same two States when February is compared with February, 1929, more than accounts for all the gain in total production. Texas' daily production averaged 961,300 gallons in February, 1929, and 1,310,700 gallons in February, 1930, a gain of 349,400 gallons. This gain was fairly well scattered over the State. In California, the February, 1929, production averaged 1,935,000 gallons daily and 2,460,000 gallons in February, 1930, a gain of 525,700 gallons. Thus the two States in February show a daily gain of 875,100 gallons.

This was more than the gain in the United States which totaled 770,000 gallons daily. These data show that outside of these two States natural gasoline production is less than it was a year ago. Oklahoma, which is second among the natural gasoline states, is producing less than it was a year ago.

**NATURAL GASOLINE FOR FEBRUARY**

(Thousands of gallons)

| | Natural gasoline | | | | | Blended motor fuel, February, 1930 | | |
|---|---|---|---|---|---|---|---|---|
| | Production | | | Stocks end of month | | | | |
| | Feb., 1930 | Jan., 1930 | Feb., 1929 | Feb., 1930 | Jan., 1930 | Natural gasoline used | Naphtha or other oils used | Stocks end of month |
| Appalachian | 9,200 | 10,900 | 10,900 | 3,235 | 3,411 | 79 | 88 | 216 |
| Ill., Ky., etc. | 1,300 | 1,400 | 1,200 | 431 | 404 | ... | 1 | 9 |
| Oklahoma | 47,300 | 50,000 | 47,500 | 10,089 | 10,626 | 361 | 203 | 143 |
| Oklahoma City | 1,600 | 1,800 | ... | 284 | 196 | 24 | 27 | 4 |
| Osage County | 5,900 | 6,200 | 6,000 | 2,044 | 2,721 | 4 | 2 | 14 |
| Seminole, etc. | 21,800 | 23,600 | 23,400 | 2,332 | 2,395 | 16 | 12 | 39 |
| Rest of State | 18,000 | 18,400 | 18,100 | 5,429 | 5,314 | 317 | 162 | 86 |
| Kansas | 2,800 | 2,600 | 2,800 | 816 | 535 | 30 | 1 | 7 |
| Texas | 36,700 | 37,200 | 29,800 | 6,116 | 7,147 | 161 | 260 | 106 |
| Panhandle | 18,200 | 19,000 | 11,500 | 2,295 | 3,071 | 47 | 93 | 21 |
| North Texas | 3,600 | 3,400 | 3,900 | 975 | 1,006 | 31 | 33 | 26 |
| West Central | 11,800 | 11,500 | 12,100 | 2,425 | 2,520 | 64 | 110 | 53 |
| Rest of State | 3,100 | 3,300 | 2,300 | 421 | 550 | 19 | 24 | 6 |
| Louisiana | 6,000 | 7,700 | 4,900 | 809 | 1,030 | 10 | 11 | 8 |
| Arkansas | 2,400 | 2,400 | 2,400 | 247 | 246 | 210 | 223 | 25 |
| Rocky Mountain | 3,800 | 3,200 | 3,200 | 569 | 584 | ... | ... | ... |
| California | 68,900 | 69,800 | 54,200 | 1,721 | 1,688 | ... | ... | ... |
| Long Beach | 14,400 | 14,800 | 18,400 | ... | ... | ... | ... | ... |
| Ventura Avenue | 5,700 | 5,500 | 5,500 | ... | ... | ... | ... | ... |
| Seal Beach | 2,900 | 3,200 | 2,700 | ... | ... | ... | ... | ... |
| Huntington Beach | 3,200 | 3,500 | 3,400 | ... | ... | ... | ... | ... |
| Santa Fe Springs | 20,800 | 21,300 | 11,000 | ... | ... | ... | ... | ... |
| Rest of State | 21,900 | 21,500 | 13,200 | ... | ... | ... | ... | ... |
| Total | 178,400 | 185,200 | 156,900 | 24,033 | 25,671 | 851 | 787 | 514 |
| Daily average | 6,370 | 5,970 | 5,600 | ... | ... | ... | ... | ... |
| Total (thousands barrels) | 4,248 | 4,410 | 3,736 | 572 | 611 | 20 | 19 | 12 |
| Daily average | 152 | 142 | 133 | ... | ... | ... | ... | ... |

## Construction and Operation

### CONSTRUCTION AND OPERATION STANDARD CASINGHEAD GAS CONTRACT

(In two parts—Part 1)

Although oil leases have for a great many years been practically universally negotiated on a standard contract known as Form 88, no such form contract has heretofore existed with respect to transferring the casinghead gas rights acquired under Form 88 to the natural gasoline manufacturer. While a number of the vital terms of casinghead gas contracts which have been written in the past differed as between different parties a general outline was more or less followed, particularly as to the general clauses.

Some years ago the Natural Gasoline Association of America wrote a contract which it expected to be accepted as standard by producer and gasoline manufacturer. It was claimed that the contract was too one-sided. If it was, it deserved the fate which it met for few contracts were negotiated under its provisions. The necessity for a standard form nevertheless continued to be apparent. A contract committee has deliberated many months and has brought out of conference a contract that it is hoped it will become the standard for future sales of casinghead gas by producers to natural gasoline manufacturers. It is well to observe that possibly 50 per cent of the casinghead contracts negotiated in the Mid-Continent during the last year did not differ in any material respect from the association's standard now being promulgated.

**Purpose, Delivery, Place and Date**

After the preamble which discusses the purposes of the buyer and seller, the manufacturer undertakes to buy all of the casinghead gas produced on the described lease or leases, and to take that gas at the casinghead of each well, or at traps, flow tanks, or storage tanks. Some of the richest vapors come off of the storage tanks and the seller as well as the buyer profits from the utilization of these vapors if a sufficient volume is available. It pays the producer to use tight storage on which some pressure can be maintained.

To build a plant of 10,000,000 cubic feet may require 90 days. A plant of 25,000,000 cubic feet will of course take longer to complete. The manufacturer should be allowed ample time. If unseasonable or bad weather seriously handicaps construction, the producer should allow additional time to the buyer of the gas, if it appears the buyer has done his "level best." After this reasonable time has elapsed, the manufacturer should, of course, pay for the gas as though he were in fact utilizing it.

**Lean and Flush Gas**

No one who is initiated needs to be informed that the cost of building 1,000,000 feet of plant capacity is expensive. There should, therefore, be a limit to the amount of gas a manufacturer may

(Continued on Page 172)

### STUDY LIQUEFIELD GAS

Arrangements for a survey of the general conditions attending the marketing of liquefied petroleum gas have been made by the United States Bureau of Mines, through its petroleum economics division. This analysis will include a survey of sales and distribution of liquefield petroleum gases to domestic and industrial consumers over a period of years, and of the industrial uses for which this commodity is now being distributed. This survey is being undertaken in response to a number of requests which have been received for specific information regarding the growth in the use of this fuel.

### TO SEPARATE PROPERTIES

Columbia Gas & Electric Corp. has announced a plan to separate its oil and gasoline propeties from the public utility business of the Columbia System. The segregation will be effective as of January 1, 1930. A new company, to be called the Columbia Oil & Gasoline Corp. will be created, to which Columbia Gas & Electric will transfer all the stock and indebtedness held by it in each of four subsidiary companies, which now operate four gasoline plants in Pennsylvania owned by Columbia Gas & Electric Corp. The new corporation will control a process whereby gasoline is extracted from natural gas.

### DISMANTLING PLANTS

The Atlantic Oil Producing Co. has shut down all of its natural gasoline plants and has dismantled most of the equipment. The company had two plants in Oklahoma. One was located on the N half SE, Section 36-12n-10e, in Okfuskee County. The other was located in the S half of NE, Section 16-14n-10e, in Creek County. Each had a rated capacity of 2,500 gallons each.

In Gray County of the Texas Panhandle (NW, Section 83, Block 3, I.&G.N. R.R. Survey) the company also had a plant with a rated capacity of 10,000 gallons daily. The gas for these plants has been sold to other manufacturers.

### PLANT IN NEW MEXICO

FORT WORTH, Tex., Apr. 5.—The Texas Pacific Coal & Oil Co. has announced that it will build a natural gasoline plant in Section 23-26 on its "A" lease, New Mexico, where it has three completed wells. The first well was completed as a gasser and two later wells were completed as oil producers, producing an average of around 1,065 bbls. per day.

The gas from the oil well tests sixtenths of a gallon per 1,000 feet, and there are about 5,000,000 feet of it to be consumer per day. The gasoline will be shipped from the plant by a railroad which is soon to be completed in the area. This will be the first gasoline plant for the Hobbs district.

# Brief Items for Petroleum Refiners

## Diesel Fuel to Be Sold at Airport by The Texas Company

Diesel fuel for airplanes has received wide consideration during the past week due to the aircraft show being held at Detroit under the auspices of the Society of Automotive Engineers and the announcement by The Texas Company that it would shortly have the fuel available at airports throughout the country.

The announcement regarding The Texas Company's plans was made by Capt. Franck M. Hawks, superintendent of the aviation division, who last week received nationwide attention when he completed the first transcontinental glider flight. Captain Hawks has flown airplanes powered by the Packard Diesel engine and is enthusiastic regarding the future of this airplane. Economy, elimination of fire hazard, uniformity in operation regardless of weather conditions and the simplicity of the engine are the advantages stressed by Captain Hawks.

It was also announced that a successful test of Packard Diesel engines had been made in a Ford Tri-motored plane and that in the future this type engine would be optional with buyers.

**Explain Design**

At a dinner of the Society of Automotive Engineers held in Detroit Tuesday night, L. M. Woolson, designer of the Packard Diesel aircraft engine, removed much of the mystery that has prevailed regarding the new type engine. Mr. Woolson pointed out the main differences between the gasoline and Diesel engines.

"The real point of departure between the two systems of operation involved," Mr. Woolson said, "is the ignition system. In the gasoline engine an electric spark is depended upon to fire a combustionable mixture of gasoline vapor and air, the ratio of which must be maintained within lighter-than-air limits to be fired by this method. Generally a maximum variation of 2 to 1 is permissible, that is, the air to gasoline by weight may vary from 10 to 1 to 20 to 1 and leaner and richer mixtures than these will fail to fire regularly in the gasoline engine cylinders.

"In the Diesel engine air alone is introduced into the cylinder instead of the

(Continued on Page 172)

### SUNBURST SUES RAILROAD

The Sunburst Oil & Refining Co. of Great Falls, Mont., has brought suit against the Great Northern Railroad to recover $4,243.70. The suit affects practically every skimming plant and refinery in the Rocky Mountain region. The Sunburst company shipped 266 carloads of petroleum distillate at the established rate of 20½ cents per hundred pounds, over the Great Northern lines. The railroad charged $39,310 on the shipments, estimating the weight of the distillate to be 7.4 pounds per gallon, which brought the weight of all the shipments to 19,182,237 pounds. The Sunburst company alleges the weight of a gallon of distillate is 6.6 pounds, thus bringing the total to 17,085,342 pounds and the refining company asks for a judgment based on its calculation of the weight of the shipments.

### OLD DUTCH CHOOSES OFFICERS

MUSKEGON, Mich., Apr. 7.—John Borden has been elected president of the Old Dutch Refining Co. of this city following the resignation of Walter Anderson. Ernest L. Hughes of Hughes & Co., Chicago fuel oil marketers, will be vice president and general manager; F. H. Duggan of Chicago, secretary, and H. Buining of Muskegon, treasurer.

## MEN WELL KNOWN IN OIL INDUSTRY ON PROGRAM FOR N.P.A. MEETING

The program prepared for the semi-annual meeting of the National Petroleum Association, to be held in Cleveland, Ohio, Wednesday and Thursday, April 23 and 24, contains the names of men well known in the oil and allied industries.

E. M. Lyons, president of the association, will give the opening address, treating not only subjects directly concerning the oil business but others of pertinent interest. E. B. Reeser, president of the American Petroleum Institute and head of the various Barnsdall oil interests, is to discuss the industry's problems and progress.

Alfred Reeves, general manager of the National Automobile Chamber of Commerce, will speak on "Advantages That Come From Co-operation in the Motor Industry." What the manufacturers of automobiles have done in their joint efforts is a remarkable story, which it is said never has been told fully to oil men. A. M. Maxwell, vice president in charge of marketing for the Standard Oil Co. of Ohio, is a new speaker on the association's program. He is to speak on the subject of marketing.

**Questions From Floor Welcomed**

C. F. Kettering, president of the General Motors Research Corp. and distinguished automotive engineer, will deal with subjects having a common interest for the motors and the manufacturer of motor fuels and lubricants. He has addressed many meetings of oil men and interest in his talks is heightened by the fact that he welcomes questions from the floor.

H. S. Bell, petroleum engineer, will present an illustrated paper on "Developments in Foreign Refining." D. G. Brandt of Henry L. Doherty & Co. will discuss "Modern Trends in the Manufacture of Motor Lubricants." H. G. Dunmire of the Valvoline Oil Co. will speak on "Crystallization of Wax in Paraffin Distillate."

Others on the list of speakers are Willis Crane, traffic attorney for the National Petroleum Association; O. P. Keeney, chairman of the program committee; N. H. Weber, in charge of the association's department of trade and commerce; P. S. Tarbox, in charge of the department of manufacture; G. C. Davison of the department of research in manufacture; R. O. Wotowitch, trustee in charge of the department of fire prevention and safety; Warren Platt, editor of the National Petroleum News; Houston Dunn, manager of the National Petroleum Fire Insurance Co.

**First Aid Contest a Feature**

James H. Herbert, president of the Fire and Safety Marshals of the National Petroleum Association, will tell about his work in this field and will put on a first aid contest. His own first aid team from the Standard Oil Co. of Ohio is entered, as are those of the Conewango Refining Co. of Warren Pa., and the Independent Refining Co. of Oil City, Pa. Entries are expected also from the Kendall and Pennzoil companies. Prizes are to be awarded to the winners.

The fellowship supper will be held Wednesday evening in the Hermit Club. There will be no speeches and no professional entertainers, but there will be features provided by talent inside the association which always have made the fellowship suppers delightful affairs. The headquarters of the association throughout the meeting will be the Hotel Cleveland.

In a letter to the membership Fayette B. Dow, general counsel, says: "Put up at any hotel you please, but if you want to be where most of the boys are I advise you to make your reservations now."

## TERMINAL PLANT TAKEN OVER BY STONE COMPANY

HOUSTON, Tex., Apr. 7.—The refinery formerly owned by the Terminal Oil & Refining Co. in Texas City has been taken over and now is being operated by the Stone Oil Co., recently incorporated with R. W. Stone, president; Henry M. Stone, his brother, vice president, and R. W. Breed, secretary-treasurer.

The Terminal plant has been operated the past 18 months under receivership and in February was sold to bondholders at a receivership sale. Mills Bennett of the Mills Bennett Production Co., an independent oil operator on the Gulf Coast, purchased the plant and in turn leased it to the Stone Oil Co. Mr. Bennett was a former owner of the plant through interest in the Terminal Oil & Refining Co.

Properties of the Swiftsure Petroleum Co., a former associated company of the Terminal Oil & Refining Co., which comprised a terminal and storage facilities, also were acquired by Mills Bennett, but the Stone Oil Co. will control only the refinery proper. The refinery is operated on crude from Barbers Hill, in which field Mills Bennett, through the Mills Bennett Production Co., is a major producer, and from which the Liberty Pipe Line Co., a subsidiary, operates a line.

The plant has a capacity of 3,000 bbls. daily, but for the present will run on 1,500 bbls. It consists of three crude stills and one Jenkins cracking unit. Henry M. Stone, vice president of the new company, who has been superintendent of the plant, will continue the operating manager. The plant will refine gasoline, turpentine substitute, gas oil, Diesel oil and bunker oil.

## BRITISH AND FRENCH IN GASOLINE MARKET HERE

NEW YORK, Apr. 8.—British and French buyers have entered the Gulf and California export market for a total of 12 cargoes, according to reports in export marketing circles here today. British buyers are inquiring for seven full cargoes of 390 and 400 endpoint gasoline with four to be shipped between now and July 30 and the remainder from July 30 onward. The French inquiries are for mixed cargoes of 64-66 and Navy and are for May, June and July shipment.

It is expected that the French business will be placed at the Gulf with most of the United Kingdom shipments to go from California refineries. Size of cargoes will range from 7,500 to 9,500 tons each. Operators here are not looking for any early change in export gasoline prices.

### WILCOX BUYS 110 STATIONS

CHANUTE, Kans., Apr. 7.—The Peerless Oil & Refining Co. has announced sale of its 110 filling stations in Kansas, Oklahoma and Missouri to H. F. Wilcox Oil & Gas Co., of Tulsa. The transaction is said to involve more than $500,000. The Peerless company's refinery here is not included in the sale. It is understood that the sales organization built up by Peerless will be retained by the new owners of the gasoline and oil distributing system.

## INSTALL NEW TYPE PUMP AT LOUISIANA REFINERY

The Louisiana Oil Refining Corp. is installing a new type of pumping equipment in connection with the operation of Tube and Tank cracking units at its Shreveport, La., refinery. The change in mechanical equipment involves the installation of condensing turbine driven centrifugal pumps as charging pumps to the cracking units in place of noncondensing reciprocating pumps.

The pumping unit consists of one steam turbine having a horsepower output range of 328 to 400 horsepower when operating under 27 inches of vacuum. These turbines are directly connected to centrifugal pumps having a capacity of 125 to 225 gallons per minute at operating pressures respectively 1,200 pounds and 800 pounds. The guaranteed efficiency is 48 per cent and the water rate on the turbine is 15½ pounds of water per horsepower.

The new equipment is said to result in a substantial saving in investment and operating costs.

### MAPLE LEAF IS RUNNING OIL

The refinery at Coutts, Alberta, owned and operated by the Maple Leaf Refining Co., has started running oil after a shutdown of several months on account of scarcity of crude and bad weather conditions. The pipe line this company is laying to the Border Field is expected to be ready for use within two weeks.

### SHELL BUYS STATIONS

Shell Eastern Petroleum Products, Inc., has completed negotiations to purchase chain of five Hudson County, New Jersey, filling stations from Eckel Brothers for reported price of $200,000.

### TO SELL ETHYL GASOLINE

Arrangements have been completed by Ethyl Gasoline Corp. and Lion Oil Refining Co., whereby the latter company will manufacture and distribute Lion-Ethyl gasoline through its retail units as well as wholesale and jobbing terminals.

### HEADS SOUTHERN DIVISION

J. D. Curtin, for the past five years or more identified with the Chicago division of the Mid-Continent Petroleum Corp., has been transferred to Tulsa, where he is in charge of the company's southern division.

### PARKER NOW SUPERINTENDENT

HOUSTON, Tex., Apr. 5.—Parker Kendall formerly assistant superintendent of the Houston refinery of the Sinclair Refining Co., has been appointed superintendent to succeed J. W. Duckett, transferred to the New York offices. Harry L. Pelzer has been transferred to the Houston plant from Chicago as assistant superintendent, and W. Johnson has been appointed foreman in charge of operations, a new position.

### PHILLIPS BUYS IN ARKANSAS

The Phillips Petroleum Co. has acquired the Beard Oil Co., operating 11 service stations, 50 retail outlets and warehouse facilities in Fort Smith, Ark., and vicinity. The Beard Oil Co. is one of the oldest and largest distributors of motor fuels and oils in Arkansas. This step marks the furtherance of Phillips' plan for expansion of its retail marketing division, which has in two years grown to over 750 retail and wholesale stations and over 6,500 resale accounts.

# *At Petrolia—*

**902 Sq. Ft. of G-R Submerged Bentube Sections**

Control distillation more accurately than

Give better condensing results than

Cost considerably less than —

**1680 Sq. Ft. of Pipe Coils**

The G-R Bentube Section is patented and it is our intention to prosecute all infringements. A suit, charging infringement of our patent No. 1,617,083, has been brought in the U. S. District Court at Wilmington, Delaware.

**HEAT EXCHANGERS**
**CONDENSERS**
Sub-cooling—Partial—Reflux
*Shell-and-Tube, Atmospheric, and Condenser Box Types*
**COOLERS**
Liquid—Gas—Jacket Water
*Shell-and-Tube, Atmospheric, and Condenser Box Types*
**OIL HEATERS**
**LEVEL CONTROLLERS**

WHEN G-R Submerged Bentube Sections were first installed at the plant of W. H. Daugherty & Sons Refining Co., a subsidiary of L. Sonneborn Sons, Inc., New York City, many of the operating men were extremely dubious as to their suitability, even for ordinary condensing service.

The superiority of these sections over the pipe coils previously used became quickly apparent, however. With little more than half the surface, the Bentube Sections gave better condensing results, enabled the operators to control their distillation much more accurately, required a smaller amount of cooling water, cost considerably less, and were far more compact.

The sections were subjected to test after test, until the heaviest stocks handled in the plant were run through them. Each time, highly satisfactory results were obtained, and the men at the plant are now heartily enthusiastic about their performance.

Since the first installation of G-R Submerged Sections in this plant, four repeat orders have followed.

The Griscom-Russell Co.
285 Madison Ave., New York, N. Y.
*Branches in principal oil centers.*

# REFINERY AND CRUDE PRICES

**Quotations on refined products are for interstate or export movement unless otherwise noted.**

## GASOLINE AND NAPHTHA

| | Apr. 8 | | Apr. 1 | | Mar. 25 | |
|---|---|---|---|---|---|---|
| **OKLAHOMA (Group 3)—** | | | | | | |
| 50-52 450 endpoint | .06¼ | .06½ | .06¼ | .06½ | .06¼ | .06½ |
| 56-58 450 endpoint | .06¼ | .06½ | .06 | .06¼ | .06 | .06¼ |
| *58-60 437 endpoint (U. S. Motor) | .0675 | | .06625 | | .065 | |
| *60-62 437 endpoint | .0675 | | †.06½ | .06⅝ | †.06½ | .06⅝ |
| *60-62 400 endpoint | .075 | | .071 | | .0675 | |
| *64-66 375 endpoint | .07375 | | .075 | | †.07¼ | .07½ |
| 68-70 360 endpoint | .07¾ | | .07⅝ | .07⅞ | .07⅝ | .07⅞ |
| 64-66 437 endpoint (blend) | .06¼ | .06¾ | .06¼ | .06½ | .06 | .06¼ |
| **NORTH TEXAS—** | | | | | | |
| 56-58 450 endpoint | .06¼ | .06½ | .06 | .06¼ | .06 | .06¼ |
| 58-60 450 endpoint | .06¼ | .06½ | .06 | .06⅛ | .06 | .06⅛ |
| 58-60 437 endpoint (U. S. Motor) | .06½ | .06⅝ | .06¼ | .06½ | .06¼ | .06⅜ |
| 60-62 400 endpoint | .06¾ | | .06⅝ | .06¾ | .06¼ | .06⅝ |
| 64-66 390 endpoint | .06⅞ | .07⅛ | .06¾ | .07 | .06¾ | .07 |
| 64-66 375 endpoint | .07⅜ | .07½ | .07¼ | .07⅜ | .07¼ | .07⅜ |
| 68-70 360 endpoint | .07⅝ | .07¾ | .07⅝ | .07¾ | .07⅝ | .07¾ |
| 64-66 437 endpoint (blend) | .06¼ | .06½ | .06 | .06¼ | .06 | .06¼ |
| ***NORTH LOUISIANA—** | | | | | | |
| 58-60 437 endpoint (U. S. Motor) | .07 | | .07 | | .06¾ | .07 |
| ***ARKANSAS—** | | | | | | |
| 58-60 437 endpoint (U. S. Motor) | .07 | | .07 | | .06¾ | |
| **PENNSYLVANIA—** | | | | | | |
| 52-54 Naphtha | .07¼ | | .07¼ | | .07¼ | |
| 54-56 Naphtha | .07¼ | | .07¼ | | .07¼ | .07½ |
| 58-60 Gasoline | .07½ | .07¾ | .07½ | .07¾ | .07½ | .07¾ |
| 60 Gasoline | .08 | .08¼ | .07¾ | .08¼ | .07¾ | .08¼ |
| 62 Gasoline | .08¼ | .08½ | .07¾ | .08½ | .07¾ | .08¾ |
| 64 Gasoline | .08¼ | .08½ | .08 | .09 | .08 | .09¼ |
| 68-70 350 endpoint gasoline | .08¾ | | .08¾ | | .08¾ | |
| **CALIFORNIA—** | | | | | | |
| 58-60 437 endpoint (U. S. Motor) domestic | .07½ | .10 | .08 | .10 | .09 | .10 |
| **CHICAGO DISTRICT (Based on Group 3)—** | | | | | | |
| 50-52 450 endpoint (Naphtha) | .06¼ | .06½ | .06¼ | .06¼ | .06¼ | .06¼ |
| 56-58 450 endpoint | .06⅛ | .06⅜ | .06¼ | .06¼ | .06 | .06¼ |
| 58-60 437 endpoint (U. S. Motor) | .06½ | .06¾ | .06¼ | .06½ | .06⅛ | .06½ |
| 60-62 400 endpoint | .06¾ | .07 | .06½ | .06¾ | .06⅜ | .06⅜ |
| 64-66 375 endpoint | .07½ | .07¾ | .07⅜ | .07⅜ | .07 | .07¼ |
| 68-70 360 endpoint | .07½ | .07¾ | .07½ | .07¾ | .07½ | .07¾ |
| 64-66 437 endpoint (blend) | .06½ | .06¾ | .06¼ | .06½ | .06¼ | .06½ |
| **GULF COAST (Export)—** | | | | | | |
| 58-60 (U. S. Motor) | .08 | | .08 | | .08 | |
| 60-62 400 endpoint | .09 | | .09 | | .09 | |
| 61-63 390 endpoint | .09¼ | | .09¼ | | .09¼ | |
| 64-66 375 endpoint | .09½ | | .09½ | | .09½ | |

*Weighted average prices April 7, March 31 and 24 as reported by representative refiners. Sales to jobbers only. †No sales reported. Prices show general market.

*Louisiana, Arkansas, Mississippi and East Texas delivery.

## NATURAL GASOLINE

| | Apr. 8 | | Apr. 1 | | Mar. 25 | |
|---|---|---|---|---|---|---|
| **OKLAHOMA (Group 3)—** | | | | | | |
| Grade A, 72-79.9, 375 e.p., rec. 90% | .05¾ | | .05¾ | | .05¾ | |
| Grade AA, 80-87.9, 375 e.p., rec. 90% | .05¾ | | .05⅝ | | .05⅝ | |
| Grade B, 76-83.9, 375 e.p., rec. 85% | .05 | | .05 | | .05 | |
| Grade BB, 84-92, 375 e.p., rec. 85% | .05 | | .04⅞ | | .04¾ | |
| Grade C, 80-92, 375 e.p., rec. 78% | .04⅞ | .05 | .04¾ | | .04⅝ | .04¾ |
| **NORTH TEXAS—** | | | | | | |
| Grade A, 72-79.9, 375 e.p., rec. 90% | .05¾ | | .05¾ | | .05¾ | |
| Grade AA, 80-87.9, 375 e.p., rec. 90% | .05¾ | | .05⅝ | | .05⅝ | |
| Grade B, 76-83.9, 375 e.p., rec. 85% | .05 | | .05 | | .05 | |
| Grade BB, 84-92, 375 e.p., rec. 85% | .05 | | .04⅞ | .05 | .04¾ | |
| Grade C, 80-92, 375 e.p., rec. 78% | .04⅞ | .05 | .04¾ | | .04⅝ | .04¾ |
| **NORTH LOUISIANA—** | | | | | | |
| Grade AA, 80-87, 375 e.p., rec. 90% | .05¾ | .06 | .05¾ | .06 | .05¾ | .06 |
| Grade BB, 84-92, 375 e.p., rec. 85% | .05 | .05¼ | .05 | .05⅛ | .04¾ | .04⅞ |
| Grade C, 80-92, 375 e.p., rec. 78% | .05 | | .04¾ | .04⅞ | .04⅝ | .04¾ |
| **CALIFORNIA—** | | | | | | |
| 75-78 375-390 endpoint | .07 | .07½ | .07¼ | .07½ | .07¾ | .08¼ |
| **CHICAGO DISTRICT (Based on Group 3)—** | | | | | | |
| Grade A, 72-79.9, 375 e.p., rec. 90% | .05¾ | | .05¾ | | .05¾ | |
| Grade AA, 80-87.9, 375 e.p., rec. 90% | .05¾ | | .05⅝ | | .05⅝ | |
| Grade B, 76-83.9, 375 e.p., rec. 85% | .05 | | .05 | | .04¾ | |
| Grade BB, 84-92, 375 e.p., rec. 85% | .05 | | .04¾ | .05 | .04¾ | |
| Grade C, 80-92, 375 e.p., rec. 78% | .05 | | .04¾ | | .04⅝ | |

## BURNING OIL

| | Apr. 8 | | Apr. 1 | | Mar. 25 | |
|---|---|---|---|---|---|---|
| **OKLAHOMA (Group 3)—** | | | | | | |
| 41-43 water white kerosene | .04¼ | .04½ | .04¼ | .04½ | .04¼ | .04½ |
| 42-44 water white kerosene | .04⅝ | .05 | .04⅝ | .05 | .04⅝ | .05 |
| **NORTH TEXAS—** | | | | | | |
| 41-43 water white kerosene | .04⅛ | .04¼ | .04⅛ | .04¼ | .04⅛ | .04¼ |
| 40-42 water white kerosene | .04 | .04⅛ | .04 | .04⅛ | .04 | .04⅛ |
| ***NORTH LOUISIANA—** | | | | | | |
| 41-43 water white kerosene | .05 | .05⅛ | .04¾ | .05¼ | .04¾ | .05 |
| ***ARKANSAS—** | | | | | | |
| 41-43 water white kerosene | .05 | .05⅛ | .04¾ | .05 | .04¾ | .05 |
| **PENNSYLVANIA—** | | | | | | |
| 43 Kerosene prime white | .05¾ | | .05¾ | | .05¾ | |
| 45 Kerosene water white | .05¾ | .05⅞ | .05¾ | .06 | .05⅞ | .06 |
| 46 Kerosene water white | .06¼ | | .06¼ | | .06¼ | |
| 47 Kerosene water white | .06½ | .06¾ | .06½ | | .06¼ | .06¾ |
| 300 Mineral Seal | .07¼ | | .07¼ | | .07¼ | |
| **CALIFORNIA—** | | | | | | |
| 38-40 water white Kero. (high burning test) | .04½ | .05 | .04½ | .05 | .04½ | .05 |
| Engine distillate, 43-44, 445 endpoint | .06½ | .07 | .06½ | .07 | .06½ | .07 |
| Engine distillate, 42-44, 480 endpoint | .06 | .06½ | .06 | .06½ | .06 | .06½ |
| **CHICAGO DISTRICT (Based on Group 3)—** | | | | | | |
| 41-43 water white kerosene | .04¼ | .04½ | .04¼ | .04½ | .04⅛ | .04⅜ |
| 42-44 water white kerosene | .04½ | .05 | .04½ | .05 | .04¼ | .04¾ |
| **GULF COAST (Export)—** | | | | | | |
| 41-43 prime white | .06 | | .06 | | .06 | |
| 41-43 water white | .07 | | .07 | | .07 | |

*Louisiana, Arkansas, Mississippi and East Texas delivery.

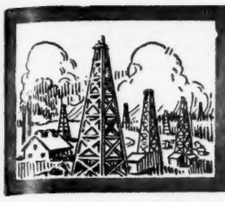
## FUEL OIL

| | Apr. 8 | | Apr. 1 | | Mar. 25 | |
|---|---|---|---|---|---|---|
| **OKLAHOMA (Group 3)—** | | | | | | |
| Below 18 Fuel Oil, per bbl. | .62½ | .67½ | .65 | .70 | .67½ | .72½ |
| 18-22 Fuel Oil, per bbl. | .65 | .75 | .65 | .75 | .70 | .75 |
| 20-22 Fuel Oil, per bbl. | .70 | .75 | .70 | .75 | .72½ | .75 |
| 22-26 Fuel Oil, per bbl. | .75 | .80 | .75 | .80 | .77½ | .82½ |
| 24-26 Fuel Oil, per bbl. | .82½ | .87½ | .82½ | .87½ | .82½ | .87½ |
| 26-30 Fuel Oil, per bbl. | .85 | .90 | .85 | .90 | .85 | .90 |
| 28-30 Fuel Oil, per bbl. (industrial) | .95 | 1.00 | .95 | 1.00 | .95 | 1.05 |
| 32-36 Gas Oil (industrial) | .02½ | .02⅝ | .02½ | .02⅝ | .02½ | .02⅝ |
| 32-36 Gas Oil (straw color) | .02⅝ | .02⅞ | .02⅝ | .02⅞ | .02¾ | .03 |
| 36-38 Distillate | .03 | | .03 | | .03 | |
| 38-40 Straw Distillate | .03 | .03⅛ | .03 | .03¼ | .03⅛ | .03¼ |
| **NORTH TEXAS—** | | | | | | |
| Below 20 Fuel Oil, per bbl. | .50 | .60 | .55 | .60 | .57½ | .62½ |
| 24-26 Fuel Oil, per bbl. | .75 | .80 | .77½ | .80 | .77½ | .80 |
| 32-36 Gas Oil (straw) | .02¼ | .02½ | .02⅜ | .02½ | .02⅜ | .02½ |
| 38-40 Straw Distillate | .02⅞ | .03 | .03 | | .03 | |
| ***NORTH LOUISIANA—** | | | | | | |
| 18-20 Fuel Oil, per bbl. | .75 | .80 | .75 | .80 | .85 | |
| 30-32 Gas Oil | .02¾ | .03 | .02¾ | .03¼ | .03 | .03⅛ |
| ***ARKANSAS—** | | | | | | |
| 33-36 Distillate | .02⅞ | .03 | .03 | .03¼ | .03 | .03⅛ |
| 30-32 Gas Oil | .02¾ | .03 | .02¾ | .03¼ | .03 | .03⅛ |
| 16-22 Refinery Fuel Oil, per bbl. | .75 | .80 | .75 | .80 | .80 | .90 |
| **GULF COAST (South Texas)—** | | | | | | |
| Gas Oil | .03¾ | .04 | .03¾ | .04 | .03¾ | .04 |
| Bunker C Fuel (cargo lots), per bbl. | .75 | .80 | .75 | .80 | .65 | .70 |
| Bunker C Fuel (small lots) | .95 | 1.00 | .95 | 1.00 | .95 | 1.00 |
| **PENNSYLVANIA—** | | | | | | |
| 30-34 Fuel Oil | .04⅜ | .04½ | .04⅜ | | .04½ | |
| 36-40 Fuel Oil | .04½ | .04⅝ | .04⅜ | .04½ | .04½ | .04⅜ |
| **CALIFORNIA—** | | | | | | |
| 33-36 Distillate | .02¾ | .03¼ | .03 | .03½ | .03 | .03½ |
| 26-32 Distillate | .01¾ | .02½ | .02 | .02½ | .02 | .02½ |
| 15-20 Fuel Oil, Bunker (at tidewater) | .65 | .75 | .70 | .80 | .70 | .80 |
| 15-20 Fuel Oil (cargo lots), per bbl. | .57½ | .70 | .60 | .75 | .60 | .75 |
| 27 plus Diesel, per bbl. | .85 | 1.00 | .90 | 1.05 | .90 | 1.05 |
| **CHICAGO DISTRICT (Based on Group 3)—** | | | | | | |
| 22-26 Fuel Oil, per bbl. | .75 | .80 | .75 | .80 | .75 | .80 |
| 18-22 Fuel Oil, per bbl. | .62½ | .67½ | .65 | .70 | .65 | .70 |
| 28-30 Fuel Oil, per bbl. | .90 | .95 | .90 | .95 | .90 | .95 |
| 32-36 Gas Oil (zero) | .02⅝ | .02¾ | .02¾ | .02⅞ | .02¾ | .02⅞ |
| 32-36 Gas Oil (industrial) | .02⅝ | .02½ | .02⅜ | .02½ | .02⅜ | .02½ |
| 36-38 Distillate | .02¾ | .02⅞ | .02¾ | .02⅞ | .02⅝ | .02¾ |
| 38-40 Straw Distillate | .03 | .03¼ | .02⅞ | .03 | .03 | .03¼ |

*Louisiana, Arkansas, Mississippi and East Texas delivery.

## LUBRICATING OIL AND WAX

| | Apr. 8 | | Apr. 1 | | Mar. 25 | |
|---|---|---|---|---|---|---|
| **OKLAHOMA (Group 3)—** | | | | | | |
| 100 vis., 2 color, 20-25 cold test | .06 | .07 | .06 | .07 | .06 | .07 |
| 100 vis., 3 color, 20-25 cold test | .05½ | .06 | .05½ | .06 | .05½ | .06 |
| 150 vis., 3 color, 20-25 cold test | .08½ | .09 | .08½ | .09 | .08 | .08½ |
| 150 vis., 4 color, 20-25 cold test | .08 | .08½ | .08 | .08½ | .07¾ | .08 |
| 180 vis., 3 color, 23-28 cold test | .10 | .10½ | .10 | .10½ | .09¾ | .10 |
| 180 vis., 4 color, 23-28 cold test | .09½ | .10 | .09½ | .10 | .09¼ | .09½ |
| 180 vis., 5 color, 23-28 cold test | .09 | .09½ | .09 | .09½ | .09 | .09¼ |
| 200 vis., 3 color, 23-28 cold test | .11½ | .12 | .11½ | .12 | .11 | .11½ |
| 200 vis., 4 color, 23-28 cold test | .11 | .11½ | .11 | .11½ | .11 | .11¼ |
| 200 vis., 5 color, 23-28 cold test | .10½ | .11 | .10½ | .11 | .10¼ | .10½ |
| 240 vis., 3 color, 25-30 cold test | .15 | .15½ | .15 | .15½ | .14¼ | .14½ |
| 240 vis., 4 color, 25-30 cold test | .14 | .14½ | .14 | .14½ | .13¼ | .13½ |
| 240 vis., 5 color, 25-30 cold test | .13½ | .14 | .13½ | .14 | .12¾ | .13 |
| 280 vis., 3 color, 25-30 cold test | .17½ | .18 | .17½ | .18 | .16¾ | .17 |
| 280 vis., 4 color, 25-30 cold test | .16½ | .17 | .16½ | .17 | .15½ | .16 |
| 280 vis., 5 color, 25-30 cold test | .15 | .15½ | .15 | .15½ | .14¾ | .15 |
| Cylinder Stocks: | | | | | | |
| 600, steam refined, light green | .09 | .11 | .09 | .11 | .09 | .11 |
| 600, steam refined, dark green | .08 | .10 | .08 | .10 | .08 | .10 |
| 190-200 vis., D color Bright Stock | .41 | .42 | .41 | .42 | .41 | .42 |
| 150-160 vis., D color Bright Stock | .37 | | .37 | | .37 | |
| 150-160 vis., E color Bright Stock | .32 | .35 | .32 | .35 | .32 | .35 |
| Waxes: | | | | | | |
| 124-126 White Crude Scale Wax | .02½ | .02⅝ | .02½ | .02⅝ | .02½ | .02⅝ |
| **PENNSYLVANIA—** | | | | | | |
| 34 Neutral | .07 | .07¾ | .07 | .07¾ | .07¼ | .07¾ |
| 34 Sundebloom | .07¾ | | .07¾ | | .07¾ | |
| 36 Miners' Neutral | .07½ | | .07½ | | .07½ | |
| 150, 3 color | .15 | .16½ | .15 | .16½ | .15½ | .17 |
| 180, 3 color | .21 | .22 | .21 | .22 | .21 | .22 |
| 200, 3 color | .25 | .26 | .25 | .26 | .25 | .26 |
| 220, 3 color | .28 | .30 | .28 | .30 | .29 | .30 |
| 600, steam refined | .23 | .24 | .23 | .24 | .24 | |
| 635, steam refined | .27 | .29½ | .27 | .29½ | .27 | .29½ |
| 650, steam refined | .29½ | .30 | .29½ | .30 | .30 | |
| 600, Pennsylvania Flash | .31 | .32 | .31 | .33 | .32 | .33 |
| 630, Pennsylvania Flash | .35 | .36 | .35 | | .35 | |
| 600, E filtered | .28½ | .30 | .28½ | .30 | .28½ | .30 |
| 600, D filtered | .35 | .35½ | .35½ | | .35 | |
| Pennsylvania Bright Stocks | .40 | .41 | .40 | .41 | .40 | .41 |
| *122-124 White Crude Scale Wax | .02⅝ | .02¾ | .02⅝ | .02¾ | .02¾ | |
| 124-126 White Crude Scale Wax | .02¾ | | .02¾ | | .02⅞ | |
| *At New York. | | | | | | |
| **GULF COAST (South Texas)—** | | | | | | |
| No. 2 color, 100 vis., pale oil | .06½ | .06¾ | .06½ | .06¾ | .06½ | .06¾ |
| No. 3 color, 200 vis., pale oil | .09¼ | .09½ | .09¼ | .09½ | .09¼ | .09½ |
| No. 3 color, 300 vis., pale oil | .10¾ | | .10¾ | | .10¾ | |
| No. 3½ color, 500 vis., pale oil | .11½ | .12 | .11½ | .12 | .11½ | .12 |
| No. 4 color, 750 vis., pale oil | .13¼ | .13½ | .13¼ | .13½ | .13¼ | .13½ |
| No. 5 color, 1,200 vis., pale oil | .16 | | .16 | | .16 | |
| No. 5 to 6 color, 1,200 vis., pale oil | .15 | | .15 | | .15 | |
| No. 5 to 6 color, 200 vis., red oil | .08½ | .08¾ | .08½ | .08¾ | .08½ | .08¾ |
| No. 5 to 6 color, 300 vis., red oil | .09½ | .10 | .09½ | .10 | .09½ | .10 |
| No. 5 to 6 color, 500 vis., red oil | .10¾ | .11¼ | .10¾ | .11¼ | .10¾ | .11¼ |
| No. 5 to 6 color, 750 vis., red oil | .12¾ | | .12¾ | | .12¾ | |
| No. 2½ color, 200 vis., pale filtered | .11 | .12 | .11 | .12 | .11 | .12 |



# REFINERY AND CRUDE PRICES

**Quotations on refined products are for interstate or export movement unless otherwise noted.**

| | | | | | | |
|---|---|---|---|---|---|---|
| No. 2½ color, 300 vis., pale filtered | .12 | .13 | .12 | .13 | .12 | .13 |
| No. 2½ color, 500 vis., pale filtered | .14½ | .15 | .14½ | .15 | .14½ | .15 |
| No. 2½-3 color, 750 vis,. pale filtered | .17 | .19 | .17 | .19 | .17 | .19 |
| **CALIFORNIA—** | | | | | | |
| 130 vis., 2½-3 color | .10¼ | .10½ | .10¼ | .10½ | .10¼ | .10½ |
| 200 vis., 2½-3 color | .11½ | .11¾ | .11½ | .11¾ | .11½ | .11¾ |
| 300 vis., 3-3½ color | .13 | .13½ | .13 | .13½ | .13 | .13½ |
| 350 vis., 3½-4 color | .13½ | .13¾ | .13½ | .13¾ | .13½ | .13¾ |
| 400 vis., 3½-4 color | .15 | .15½ | .15 | .15½ | .15 | .15½ |
| Red Neutral: | | | | | | |
| 200 vis., 4½-5 color | .11 | .11¼ | .11 | .11¼ | .11 | .11¼ |
| 300 vis., 5-6 color | .12 | .12¼ | .12 | .12¼ | .12 | .12¼ |
| 400 vis., 5-6 color | .13¼ | .14 | .13¼ | .14 | .13¼ | .14 |
| 500 vis., 4½-5 color | .15¼ | .15½ | .15¼ | .15½ | .15¼ | .15½ |
| 500 vis., 5-6½ color | .15 | .15¼ | .15 | .15¼ | .15 | .15¼ |
| 600 vis., 6½ plus color | .16 | .16¼ | .16 | .16¼ | .16 | .16¼ |

Note—Bright stocks are not manufactured commercially on the Pacific Coast.

## NEW YORK (BAYONNE) REFINERY PRICES

| | Apr. 8 | | Apr. 1 | | Mar. 25 | |
|---|---|---|---|---|---|---|
| Gasoline, U. S. Motor, 58-60, 437 | .08½ | .08¾ | .08½ | .08¾ | .08½ | |
| Kerosene, water white, 41-43 | .07¾ | | .07¾ | | .07¾ | |
| *Fuel Oil, Bunker "C," 14-16, per bbl. | 1.05 | | 1.05 | | 1.05 | |
| Fuel Oil, Diesel, 28-30, per bbl. | 2.00 | | 2.00 | | 2.00 | |
| Gas Oil, 32-36 gravity | .04¾ | .05¼ | .04¾ | .05¼ | .04¾ | .05¼ |
| 25 pale Paraffin Oil | .10½ | | .10½ | | .10½ | |
| 28 pale Paraffin Oil | .07¼ | | .07¼ | | .07¼ | |
| 285 red Paraffin Oil | .12½ | | .12½ | | .12½ | |
| 250 red Paraffin Oil | .11½ | | .11½ | | .11½ | |
| 225 red Paraffin Oil | .10 | | .10 | | .10 | |
| 200 red Paraffin Oil | .09¼ | | .09¼ | | .09¼ | |
| Refined Wax: | | | | | | |
| 120-122 a.m.p., per lb. | .03⅝ | | .03⅝ | | .03⅝ | |
| 125-127 a.m.p., per lb. | .04 | | .04 | | .04 | |
| 130-132 a.m.p., per lb. | .04½ | | .04½ | | .04½ | |
| 133-135 a.m.p., per lb. | .05½ | | .05½ | | .05½ | |
| 135-137 a.m.p., per lb. | .05⅝ | | .05⅝ | | .05⅝ | |
| Petrolatum in barrels, in carload lots, per pound: | | | | | | |
| Dark Green | .01⅞ | | .01⅞ | | .01⅞ | |
| Amber | .03⅜ | | .03⅜ | | .03⅜ | |
| Extra Amber | .03½ | | .03½ | | .03½ | |
| Cream | .06⅜ | | .06⅜ | | .06⅜ | |
| Lily White | .06½ | | .06½ | | .06½ | |
| Snow White | .08⅜ | | .08⅜ | | .08⅜ | |

*Lighterage 5.0 cents a barrel extra.

## NEW YORK (BAYONNE) EXPORT PRICES

| | Apr. 8 | Apr. 1 | Mar. 25 |
|---|---|---|---|
| Kerosene, prime white | .07¾ | .07¾ | .07¾ |
| Kerosene, water white | .09 | .09 | .09 |
| 600, steam refined cylinder stocks, in bbls. | .31 | .31 | .31 |
| 635, steam refined | .33 | .33 | .33 |
| 650, steam refined | .37 | .37 | .37 |
| 600, Pennsylvania Flash | .39 | .39 | .39 |
| 630, Pennsylvania Flash | .42 | .42 | .42 |
| 600, Warren E. | .38½ | .38½ | .38½ |
| 600, Oil City E. | .37½ | .37½ | .37½ |
| Light 140-150 Bright Stocks | .48 | .48 | .48 |
| Dark 140-150 Bright Stocks | .47 | .47 | .47 |

## LOS ANGELES EXPORT PRICES

| | Apr. 8 | | Apr. 1 | | Mar. 25 | |
|---|---|---|---|---|---|---|
| Kerosene, water white | .04 | .04½ | .04 | .04½ | .04 | .04½ |
| *U. S. Motor Gasoline, 53-55, 437 e.p. | .06¼ | .06¾ | .06¼ | .06¾ | .06¼ | .06¾ |

*Prices on coastwise shipments.

## CRUDE OIL PRICES

**OKLAHOMA, KANSAS, NORTH AND EAST CENTRAL TEXAS**

Oklahoma City—Same as other Mid-Continent price schedule except Empire Pipe Line Co. posts all oil 40 gravity and above at $1.33 on February 15, 1930.

Corsicana heavy (Jan. 16, 1930)*.....$ .70
Other fields.....See gravity table

*Posted by Magnolia Petroleum Co.

**TEXAS PANHANDLE**

Gray County, Wheeler County and Carson-Hutchinson Counties—See gravity table.

**WEST TEXAS**

Iatan*.....Same as North Texas
Crane-Upton-Crockett, Pecos, Winkler, Mitchell and Ector
.....See gravity table, Column 3
Howard and Glasscock
.....See gravity table, Column 11
Chalk†.....$ .65

*Includes Westbrook Field. †Posted by Humble Oil & Refining Co.

**ARKANSAS-NORTH LOUISIANA**

Smackover, below 24 gravity (May 20, 1929).....$ .85
Smackover, 24 gravity and above (May 20, 1929) ..... 1.00
Cotton Valley, below 36 gravity (Jan. 17, 1930) ..... .80
Bellevue (Jan. 17, 1930) ..... 1.05
Urania (Jan. 16, 1930) ..... .85
East El Dorado (May 22, 1929) ..... .85
Other fields.....See gravity table

Cotton Valley crude about 36 gravity takes same gravity price schedule as shown for North Louisiana and Arkansas crude in Mid-Continent gravity price table.

Note—Smackover, Cotton Valley and Bellevue posted by Standard Oil Co. of Louisiana and Magnolia Petroleum Co.; Urania posted by Louisiana Oil Refining Corp.; East El Dorado posted by Magnolia Petroleum Co.

**GULF COAST**

Grade A (Jan. 15, 1930)*.....$1.05
Grade B.....See gravity table
Jennings, La. (Jan. 15, 1930)†..... 1.00
Refugio (light).....Same as Grade B
Refugio (heavy) (Apr. 1, 1930)..... .75
Sorrento (Jan. 15, 1930)‡..... 1.00
Markham (Jan. 15, 1930)‖..... .75
High Island (Jan. 15, 1930)¶..... .85

*Humble Oil & Refining Co. †Gulf Pipe Line Co. ‡Sun Pipe Line Co. ‖The Texas Pipe Line Co. ¶Posted by Gulf Coast Pipe Line Co.

**ROCKY MOUNTAIN STATES**

**Ohio Oil Co.-Midwest Refining Co.**
(Effective Feb. 15, 1930)

Ilies (Feb. 15, 1930):
33 gravity and above ..... .87
Under 33 gravity ..... .65
Rutton Creek (Feb. 15, 1930)..... 1.25
Rock Creek, Wyo.....$1.25
Salt Creek.....See gravity table
Big Muddy ..... 1.33
Grass Creek, heavy (July 27, 1928)... .90
Grass Creek, light ..... 1.45
Mule Creek (May 21, 1929) ..... 1.20
Elk Basin ..... 1.45
Lance Creek ..... 1.53
Poison Spider (March 14, 1927) ..... 1.00
Notches (March 14, 1927) ..... .65
Rex Lake (February 22) ..... 1.10
Osage (May 21, 1929) ..... 1.53
Lost Soldier (contract, May 22)..... 1.05
Hamilton Dome (March 14, 1927) ..... .85
Pedro (May 21, 1929) ..... 1.25
Greybull (Feb. 15, 1930) ..... 1.45
Four Bear (May 21, 1929) ..... .85

(Continued on Page 168)

## CRUDE OIL GRAVITY TABLE

| Gravity— | 1 Okla., Kans., N. C. Texas | 2 No. La. and Arkansas | 3 Crane, Upton Stocks, Winkler, Pecos, Mitchell, (West Texas) Lea, N. Mex. | 4 Stephens, Ark. | 5 Wheeler (Texas Panhandle) | 6 Gray County (Texas Panhandle) | 7 Carson and Hutchinson (Texas Panhandle) | 8 Salt Creek, Wyo. | 9 Grade B Gulf Coast and Refugio crude | 10 Somerset (South Central Texas) | 11 Howard and Glasscock, W. Tex. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 24 and above | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... |
| Below 24 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... |
| Below 25 | .60 | .... | .55 | .... | .... | .... | .... | .... | .90 | .... | .55 |
| 25 to 25.9 | .66 | .... | .58 | .... | .... | .... | .... | .... | .93 | .... | .58 |
| 26 to 26.9 | .72 | .... | .61 | .... | .... | .... | .... | .... | .96 | .... | .61 |
| 27 to 27.9 | .78 | .... | .64 | .... | .... | .... | .... | .... | .99 | .... | .64 |
| Below 28 | .... | .78 | .... | .90 | .70 | .69 | .72 | .... | .... | .... | .... |
| 28 to 28.9 | .84 | .84 | .67 | .94 | .70 | .69 | .72 | .... | 1.02 | .... | .66 |
| 29 to 29.9 | .90 | .90 | .70 | .98 | .70 | .75 | .72 | .90 | 1.05 | .... | .68 |
| 30 to 30.9 | .96 | .96 | .73 | 1.02 | .76 | .81 | .72 | .96 | 1.08 | .... | .70 |
| 31 to 31.9 | 1.02 | 1.02 | .76 | 1.06 | .82 | .87 | .72 | 1.02 | 1.11 | .... | .72 |
| 32 to 32.9 | 1.08 | 1.08 | .79 | 1.10 | .88 | .93 | .78 | 1.08 | 1.14 | 1.05 | .74 |
| 33 to 33.9 | 1.11 | 1.11 | .82 | .... | .91 | .96 | .81 | 1.11 | 1.17 | 1.07 | .78 |
| 34 to 34.9 | 1.14 | 1.14 | .85 | .... | .94 | .99 | .84 | 1.14 | 1.20 | 1.09 | .78 |
| 35 to 35.9 | 1.17 | 1.17 | .88 | .... | .97 | 1.02 | .87 | 1.17 | 1.23 | 1.11 | .80 |
| 36 to 36.9 | 1.20 | 1.20 | .91 | .... | 1.00 | 1.05 | .90 | 1.20 | 1.26 | 1.13 | .82 |
| 37 to 37.9 | 1.23 | 1.23 | .... | .... | 1.03 | 1.08 | .93 | 1.23 | 1.29 | 1.15 | .... |
| 38 to 38.9 | 1.26 | 1.26 | .... | .... | 1.06 | 1.11 | .96 | .... | 1.32 | 1.17 | .... |
| 39 to 39.9 | 1.29 | 1.29 | .... | .... | 1.09 | 1.14 | .99 | .... | 1.34 | .... | .... |
| 40 to 40.9 | 1.32 | 1.32 | .... | .... | 1.12 | 1.17 | 1.02 | .... | 1.36 | .... | .... |
| 41 to 41.9 | 1.35 | 1.35 | .... | .... | 1.15 | 1.20 | 1.05 | .... | 1.38 | .... | .... |
| 42 to 42.9 | 1.38 | 1.38 | .... | .... | 1.18 | 1.23 | 1.08 | .... | 1.40 | .... | .... |
| 43 to 43.9 | 1.41 | 1.41 | .... | .... | 1.21 | 1.26 | 1.11 | .... | 1.42 | .... | .... |
| 44 and above | 1.44 | 1.44 | .... | .... | 1.24 | 1.29 | 1.14 | .... | 1.44 | .... | .... |

Column 1, Note—Above prices posted by Prairie Oil & Gas Co. on February 15, 1930, by Sinclair Oil & Gas Co. February 13, 1930. On January 15, 1930, Humble Oil & Refining Co. posted North Central Texas crude at following prices: Below 25 gravity 60 cents; a 6-cent differential added per degree to 32-32.9 gravity at $1.08 and a 3-cent differential above making 44 gravity and above at $1.44. The Carter Oil Co. posted this schedule for Oklahoma and Kansas, January 16. Same date Magnolia posted these prices in North Central Texas. On January 17, Magnolia posted the schedule for Oklahoma and Kansas.

North Central Texas—Includes Ranger, Mexia, Powell, Richland, Wortham, Lytton Springs, Currie, Nocona and Moran Pools.

Column 2—Arkansas and North Louisiana—(Caddo, Bull Bayou, Crichton, Cotton Valley above 36 gravity, DeSoto, Haynesville, Homer and El Dorado only). Texas Pipe Line Co., January 15, 1930, Standard Oil Co. of Louisiana, Louisiana Oil Refining Co., Gulf Pipe Line Co., Magnolia Petroleum Co., January 16, 1930.

Column 3—Humble Oil & Refining Co., January 15, 1930, and Magnolia Petroleum Co., January 16, 1930.

Column 4—Atlantic Oil Producing Co. and Louisiana Oil Refining Corp., May 21, 1929.

Columns 5, 6 and 7—Humble Oil & Refining Co., January 15, 1930, and Magnolia Petroleum Co., January 16, 1930. Adopted by Prairie Oil & Gas Co., February 15.

Column 8—Midwest Refining Co., February 15, 1930. All crude over 37 gravity $1.23 per barrel.

Column 9—Humble Oil & Refining Co., April 1, 1930.

Column 10—Grayburg Pipe Line Co. and Pioneer Oil & Refining Co., April 7.

Column 11—Humble Oil & Refining Co., January 15, 1930, Magnolia posted Howard-Glasscock crude same schedule as West Texas, January 16, 1930.

## CALIFORNIA CRUDE OIL PRICES

**Standard Oil Co.-Union Oil Co. (Effective March 11, 1930)**

| Gravity— | 1 Seal Beach, Salt Lake, Newport, Summerland, Lawndale, Los Angeles Torrance, Richfield, Alamitos Heights, Huntington Beach, Signal Hill, Inglewood | 2 Whittier, La Habra, Coyote Hills | 3 Midway-Sunset, Elk Hills, Lost Hills, Belridge, Buena Vista Hills | 4 Montebello | 5 Santa Fe Springs (Nov. 8) | 6 Santa Maria, Coalinga | 7 Wheeler Ridge, Fruitvale | 8 Orcutt, Ventura, Rincon | 9 Ventura Avenue (Nov. 8) | 10 Elwood Terrace | 11 Athens, Rosecrans, Domingues |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 to 14.9 | .70 | .70 | .55 | .70 | .... | .55 | .55 | .55 | .70 | .... | .... |
| 15 to 15.9 | .70 | .70 | .55 | .70 | .... | .55 | .55 | .55 | .70 | .... | .... |
| 16 to 16.9 | .70 | .70 | .55 | .70 | .... | .55 | .55 | .55 | .70 | .... | .... |
| 17 to 17.9 | .70 | .70 | .55 | .70 | .... | .55 | .55 | .55 | .70 | .... | .... |
| 18 to 18.9 | .76 | .76 | .62 | .71 | .... | .62 | .62 | .65 | .76 | .... | .... |
| 19 to 19.9 | .82 | .82 | .70 | .77 | .... | .70 | .70 | .70 | .82 | .... | .... |
| 20 to 20.9 | .88 | .87 | .78 | .83 | .... | .78 | .78 | .78 | .88 | .... | .... |
| 21 to 21.9 | .94 | .93 | .86 | .90 | .92 | .86 | .86 | .90 | .91 | .... | .... |
| 22 to 22.9 | 1.00 | .98 | .94 | .97 | .95 | .94 | .94 | .95 | .94 | .... | .... |
| 23 to 23.9 | 1.07 | .... | 1.02 | 1.05 | 1.01 | 1.02 | 1.02 | 1.02 | 1.00 | .... | .... |
| 24 to 24.9 | 1.14 | .... | 1.09 | 1.11 | 1.07 | 1.07 | 1.07 | 1.10 | 1.07 | .. | 1.14 |
| 25 to 25.9 | 1.21 | .... | 1.16 | 1.17 | 1.13 | 1.12 | 1.12 | 1.18 | 1.14 | .. | 1.19 |
| 26 to 26.9 | 1.28 | .... | 1.23 | 1.23 | 1.19 | 1.17 | 1.17 | 1.26 | 1.21 | .. | 1.24 |
| 27 to 27.9 | 1.35 | .... | 1.30 | 1.29 | 1.25 | 1.23 | 1.22 | .... | 1.28 | .. | 1.29 |
| 28 to 28.9 | 1.42 | .... | 1.35 | 1.35 | 1.31 | 1.27 | .... | .... | 1.35 | .... | 1.34 |
| 29 to 29.9 | 1.46 | .... | 1.41 | 1.38 | 1.37 | 1.31 | .... | .... | 1.39 | .... | 1.39 |
| 30 to 30.9 | 1.50 | .... | 1.47 | 1.41 | 1.43 | 1.35 | .... | .. | 1.43 | .... | 1.45 |
| 31 to 31.9 | 1.55 | .... | 1.53 | .... | 1.49 | 1.39 | .... | .... | 1.48 | .... | 1.51 |
| 32 to 32.9 | 1.60 | .... | 1.59 | .... | 1.55 | 1.43 | .... | .... | 1.53 | .... | 1.57 |
| 33 to 33.9 | 1.65 | .... | 1.65 | .... | 1.60 | 1.47 | .... | .... | 1.59 | .... | 1.64 |
| 34 to 34.9 | 1.70 | .... | .... | .... | 1.65 | 1.51 | .... | .... | 1.65 | 1.33 | 1.71 |
| 35 to 35.9 | 1.75 | .... | .... | .... | 1.70 | 1.55 | .... | .... | 1.71 | 1.39 | 1.78 |
| 36 to 36.9 | 1.80 | .... | .... | .... | 1.75 | .... | .... | .... | .... | 1.46 | 1.84 |
| 37 to 37.9 | 1.85 | .... | .... | .... | 1.80 | .... | .... | .... | .... | 1.53 | 1.90 |
| 38 to 38.9 | 1.90 | .... | .... | .... | 1.85 | .... | .... | .... | .... | 1.60 | 1.96 |
| 39 to 39.9 | .... | .... | .... | .... | 1.90 | .... | .... | .... | .... | 1.66 | 2.02 |
| 40 to 40.9 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1.72 | 2.08 |
| 41 to 41.9 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1.78 | 2.14 |
| 42 to 42.9 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1.84 | 2.20 |

KERN RIVER, NEWHALL-McKITTRICK, MOUNT POSO AND ROUND MOUNTAIN 11 to 13.9 gravity, 50 cents; 14 gravity and above, 55 cents, effective March 11. On March 11, the Union Oil Co. posted Midway-Sunset, Elk Hills, Buena Vista, Lost Hills and Coalinga crude as follows: 11 to 13.9 gravity at 50 cents.

Column 1—Signal Hill, Seal Beach, Huntington Beach and Alamitos Heights crude, 14 to 32.9 gravity, inclusive; Richfield, Olinda-Brea and Fullerton, 14 to 30.9 gravity; Torrance and Inglewood, 14 to 28.9 gravity.

Column 2—Whittier crude, 14 to 22.9 gravity; Coyote Hills, 14 to 30.9 gravity.

Column 3—Kern River, Newhall and McKittrick, 11 to 19.9 gravity; Midway-Sunset, Buena Vista and Elk Hills, 11 to 33.9 gravity; lost hills, 11 to 34.9 gravity; oil below 14 gravity posted at 50 cents.

Column 6—Oil below 14 gravity posted at 45 cents.

Columns 8 and 9—Posted by Union Oil Co. only.

Kettleman Hills, 55 gravity and above, $1.65 (posted by Standard Oil Co. of California).

# TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns Apr. 8

## ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

### STANDARD OIL CO. (INDIANA)

| | Gasoline | | | Kero. |
|---|---|---|---|---|
| | Tank wagon | Service station | incl'ds tax of | tank wagon |
| Chicago† | 17.0 | 18.0 | 3.0 | 13.0 |
| Decatur, Ill. | 17.2 | 18.2 | 3.0 | 13.1 |
| E. St. Louis | 16.4 | 17.4 | 3.0 | 12.2 |
| Joliet | 17.4 | 18.4 | 3.0 | 13.3 |
| Peoria | 17.2 | 18.2 | 3.0 | 13.1 |
| Quincy | 17.2 | 18.2 | 3.0 | 12.9 |
| Davenport, Ia. | 17.5 | 18.5 | 3.0 | 13.3 |
| Des Moines | 17.5 | 18.5 | 3.0 | 13.3 |
| Keokuk | 17.5 | 18.5 | 3.0 | 13.3 |
| Sioux City | 17.1 | 18.1 | 3.0 | 12.9 |
| Duluth, Minn. | 18.5 | 19.5 | 3.0 | 13.9 |
| Mankato | 18.1 | 19.1 | 3.0 | 13.7 |
| Minneapolis | 18.2 | 19.2 | 3.0 | 13.9 |
| LaCrosse, Wis. | 17.2 | 18.2 | 2.0 | 14.0 |
| Milwaukee | 16.1 | 17.1 | 2.0 | 12.9 |
| Madison | 16.3 | 17.3 | 2.0 | 13.1 |
| Detroit, Mich. | 17.8 | 18.8 | 3.0 | 14.7 |
| Grand Rapids | 17.7 | 18.7 | 3.0 | 14.6 |
| Saginaw | 17.9 | 18.9 | 3.0 | 14.8 |
| Evansville, Ind. | 18.0 | 19.0 | 4.0 | 14.0 |
| Fort Wayne | 18.4 | 19.4 | 4.0 | 14.4 |
| Indianapolis | 18.2 | 19.2 | 4.0 | 14.2 |
| South Bend | 18.4 | 19.4 | 4.0 | 14.4 |
| Fargo, N. D. | 19.9 | 20.9 | 3.0 | 15.9 |
| Huron, S. D. | 19.3 | 20.3 | 4.0 | 14.7 |
| Sioux Falls | 18.1 | 19.1 | 4.0 | 14.4 |
| K. C., Mo.* | 16.9 | 17.9 | 3.0 | 11.6 |
| Springfield* | 16.8 | 17.8 | 3.0 | 12.5 |
| St. Louis* | 15.9 | 16.9 | 2.5 | 12.3 |
| St. Joseph | 16.5 | 17.5 | 2.0 | 12.2 |
| Wichita, Kans. | 15.8 | 14.8 | 3.0 | 11.8 |
| Bartlesville, Ok. | 16.5 | 17.5 | 4.0 | 11.5 |

*State tax 2 cents; remainder city tax.

†Effective February 20, discounts on Q.D.A. in Chicago district 2 cents off service station price on purchases of 500 gallons or more per month and 4 cents on purchases of 1,000 gallons or more per month.

The following quantity discounts from the service station price are allowed on monthly sales of gasoline; 2,000 gallons or less, 2 cents; more than 2,000 and less than 6,000 gallons, 2½ cents; more than 6,000 gallons, 3 cents; 100,000 gallons or more, 4½ cents. Discounts are allowed each month and they are not cumulative. Delivery tickets showing date and quantity delivered must be sent to the seller before the tenth of the month to secure the discount on the previous month's purchases.

### NAPHTHA

| | Tank wagon | Tank car |
|---|---|---|
| Oleum spirits | 14.7 | 12.9 |
| V. M. & P. Naphtha | 16.7 | 13.9 |
| Cleaner's naphtha | 17.0 | 14.9 |
| Stanisol | 17.0 | 15.4 |

Tank wagon prices f.o.b. Chicago; tank car prices f.o.b. Whiting.

### STANOLIND FURNACE OIL IN CHICAGO

| | |
|---|---|
| Less than 100 gallons | 9.0 |
| 100 to 349 gallons | 8.0 |
| 850 gallons or more | 7.5 |

Note—Outside Chicago furnace oil discount of 1 cent per gallon is given on deliveries of 100 to 349 gallons and 1½ cents on deliveries of 350 gallons or more.

### SOUTHWESTERN DISTRICT

**Magnolia Petroleum Co.**

| | Gasoline | | | Kero. |
|---|---|---|---|---|
| | Tank wagon | Service station | incl'ds tax of | tank wagon |
| Dallas, Tex. | 16.0 | 20.0 | 4.0 | 12.0 |
| Fort Worth | 16.0 | 19.0 | 4.0 | 12.0 |
| Houston | 15.0 | 19.0 | 4.0 | 11.0 |
| San Antonio | 15.0 | 19.0 | 4.0 | 11.0 |
| El Paso | 16.0 | 20.0 | 4.0 | 13.0 |
| Texarkana | 15.0 | 17.0 | 4.0 | 12.0 |
| Muskogee* | 16.0 | 19.0 | 4.0 | 10.0 |
| Okla. City* | 15.0 | 18.0 | 4.0 | 10.0 |
| Tulsa* | 15.0 | 19.0 | 4.0 | 10.0 |
| Ft. Smith, Ark. | 14.0 | 16.0 | 5.0 | 12.0 |
| Little Rock | 16.0 | 16.0 | 5.0 | 13.0 |

*Gasoline tank wagon price to dealers 2 cents under posted tank wagon.

### ROCKY MOUNTAIN DISTRICT

**Continental Oil Co.**

| | Gasoline | | | Kero. |
|---|---|---|---|---|
| | Tank wagon | Service station | incl'ds tax of | tank wagon |
| Denver, Colo. | 16.0 | 18.0 | 4.0 | 15.5 |
| Pueblo | 18.0 | 19.0 | 4.0 | 15.5 |
| Grand Junction | 22.0 | 25.0 | 4.0 | 19.0 |
| Casper, Wyo. | 18.0 | 21.0 | 4.0 | 14.0 |
| Cheyenne | 19.5 | 22.5 | 4.0 | 15.5 |
| Butte, Mont. | 23.5 | 26.5 | 5.0 | 20.0 |
| Helena | 23.5 | 26.5 | 5.0 | 20.0 |
| Salt Lake, Utah | 20.0 | 20.0 | 3.5 | 17.0 |
| Albu'que, N. M. | 20.0 | 22.0 | 5.0 | 17.0 |
| Boise, Idaho | 23.5 | 26.5 | 5.0 | 19.0 |
| Twin Falls | 23.5 | 26.5 | 5.0 | 19.0 |

### PENNSYLVANIA—DELAWARE AND PART NEW ENGLAND

**The Atlantic Refining Co.**

| | Gasoline | | | Kero. |
|---|---|---|---|---|
| | Tank wagon | Service station | incl'ds tax of | tank wagon |
| Pittsburgh, Pa. | 15.0 | *21.0 | ... | 13.0 |
| Philadelphia | 15.0 | *21.0 | ... | 13.0 |
| Scranton | 15.0 | *21.0 | ... | 13.0 |
| Allentown | 15.0 | *21.0 | ... | 13.0 |
| Altoona | 15.0 | *21.0 | ... | 13.0 |
| Erie | 15.0 | *19.0 | ... | 13.0 |
| Dover, Del. | 18.0 | 20.0 | 3.0 | 13.0 |
| Wilmington | 18.0 | 20.0 | 3.0 | 13.0 |
| Springf'd, Mass. | 15.5 | 17.5 | 2.0 | 12.5 |
| Worcester | 15.3 | 17.3 | 2.0 | 12.3 |
| Boston | 14.5 | 16.5 | 2.0 | 11.2 |
| Providence, R.I. | 14.7 | 16.7 | 2.0 | 11.7 |
| Hartford, Conn. | 15.5 | 17.5 | 2.0 | 12.5 |
| New Haven | 15.6 | 17.6 | 2.0 | 12.6 |

*Includes tax of 4 cents. Pennsylvania tax is collected by the dealer and paid by him direct to the State. The Atlantic Refining Co. recognizes a 2-cent per gallon discount on gasoline from its posted tank wagon markets on sales to dealers for purposes of resale. The Atlantic Refining Co. also recognizes a maximum discount of 2 cents per gallon on gasoline to commercial accounts under contract for one year.

### NEW YORK AND PART OF NEW ENGLAND DISTRICT

**Standard Oil Co. (New York)**

| | Gasoline | | | Kero. |
|---|---|---|---|---|
| | Tank wagon | Service station | incl'ds tax of | tank wagon |
| Albany, N. Y. | 15.6 | 17.6 | 2.0 | 14.6 |
| New York* | 14.3 | 16.3 | 2.0 | 13.3 |
| Buffalo | 15.8 | 17.8 | 2.0 | 13.8 |
| Rochester | 16.0 | 18.0 | 2.0 | 13.0 |
| Syracuse | 16.8 | 18.8 | 2.0 | 13.8 |
| Boston, Mass. | 14.5 | 16.5 | 2.0 | 12.5 |
| Augusta, Me. | 17.8 | 19.8 | 4.0 | 13.8 |
| Manch't'r, N. H. | 17.4 | 19.4 | 4.0 | 13.4 |
| Burlington, Vt. | 17.6 | 19.6 | 4.0 | 14.3 |

*Prices in steel barrels.

### SOUTHERN DISTRICT

**Standard Oil Co. (Kentucky)**

| | Gasoline | | | Kero. |
|---|---|---|---|---|
| | Tank wagon | Service station | incl'ds tax of | tank wagon |
| Atlanta, Ga. | 20.0 | 21.0 | 4.0 | 15.5 |
| Augusta | 19.0 | 21.0 | 4.0 | 15.5 |
| Macon | 21.0 | 23.0 | 4.0 | 14.0 |
| Savannah | 20.0 | 22.0 | 4.0 | 14.0 |
| Birm'ham, Ala. | 20.0 | 22.0 | 5.0 | 14.5 |
| Mobile | 17.0 | 17.0 | 4.0 | 13.5 |
| Montgomery | 20.0 | 22.0 | 4.0 | 15.0 |
| Clarks'le, Miss. | 18.0 | 20.0 | 5.0 | 12.5 |
| Jackson | 19.0 | 21.0 | 5.0 | 13.0 |
| Natchez | 18.5 | 20.5 | 5.0 | 13.0 |
| Gulfport | 20.5 | 22.5 | 5.0 | 13.0 |
| Vicksburg | 18.5 | 20.5 | 5.0 | 13.0 |
| Jack'ville, Fla. | 20.0 | 22.0 | 6.0 | 14.0 |
| Miami | 21.0 | 23.0 | 6.0 | 14.0 |
| Pensacola | 18.0 | 20.0 | 6.0 | 13.5 |
| Tampa | 20.0 | 22.0 | 5.0 | 13.0 |
| Lexington, Ky. | 18.0 | 20.0 | 5.0 | 14.5 |
| Covington | 19.0 | 20.0 | 5.0 | 14.5 |
| Louisville | 19.0 | 21.0 | 5.0 | 13.0 |
| Ashland | 19.0 | 21.0 | 5.0 | 15.0 |
| Catlettsburg | 19.0 | 21.0 | 5.0 | 15.0 |

In addition to the state tax of 4 cents on gasoline, Montgomery has city tax of 1 cent on gasoline and one-half cent on kerosene. Kerosene prices in Georgia include 1-cent tax. In Florida, an inspection fee of 0.125 cent; in Alabama, an inspection fee of one-half cent on kerosene and one-fourth cent on gasoline. Pensacola, Birmingham and Mobile taxes include 1-cent city levy. Gulfport tax includes privilege tax of 2 cents in addition to state tax.

Effective April 2, price to dealers 2 cents under posted tank wagon price.

### ATLANTIC COAST DISTRICT

**Standard Oil Co. (New Jersey)**

| | Gasoline | | | Kero. |
|---|---|---|---|---|
| | Tank wagon | Service station | incl'ds tax of | tank wagon |
| Atlantic City | 16.5 | 18.5 | 2.0 | 13.5 |
| Newark, N. J. | 15.5 | 17.5 | 2.0 | 12.5 |
| Annapolis, Md. | 18.0 | 20.0 | 4.0 | 13.0 |
| Baltimore | 17.2 | 19.2 | 4.0 | 10.5 |
| Cumberland | 19.0 | 21.0 | 4.0 | 14.0 |
| Washington | 15.7 | 17.7 | 2.0 | 12.7 |
| Danville, Va. | 19.8 | 21.8 | 5.0 | 13.8 |
| Norfolk | 18.3 | 20.3 | 5.0 | 11.0 |
| Petersburg | 18.3 | 21.3 | 5.0 | 13.3 |
| Roanoke | 20.0 | 22.0 | 5.0 | 14.0 |
| Richmond | 18.7 | 20.7 | 5.0 | 12.7 |
| Charles'n, W.Va. | 18.5 | 20.5 | 4.0 | 12.5 |
| Keyser | 19.1 | 21.1 | 4.0 | 14.1 |
| Parkersburg | 17.2 | 19.2 | 4.0 | 11.2 |
| Wheeling | 18.4 | 20.4 | 4.0 | 12.4 |
| Charlotte, N. C. | 19.3 | 20.3 | 5.0 | 14.3 |
| Hickory | 20.8 | 22.8 | 5.0 | 14.8 |
| Mt. Airy | 20.5 | 22.5 | 5.0 | 14.5 |
| Salisbury | 20.7 | 20.7 | 5.0 | 14.7 |
| Charleston, S. C. | 19.3 | 21.3 | 6.0 | 12.3 |
| Columbia | 21.2 | 23.2 | 6.0 | 14.2 |

A 2-cent per gallon discount off the gasoline tank wagon price is offered to dealers.

### PACIFIC COAST TERRITORY

**Standard Oil Co. (California)**

| | Gasoline | | | Kero. |
|---|---|---|---|---|
| | Tank wagon | Service station | incl'ds tax of | tank wagon |
| San Francisco | 20.0 | 23.0 | 3.0 | 15.5 |
| Los Angeles | 19.5 | 22.5 | 3.0 | 15.5 |
| Reno, Nev. | 25.0 | 28.0 | 4.0 | 19.0 |
| Portland, Ore. | 19.5 | 22.5 | 4.0 | 16.5 |
| Seattle, Wash. | 18.5 | 21.5 | 3.0 | 16.5 |
| Tacoma | 20.5 | 23.5 | 3.0 | 16.5 |
| Spokane | 22.5 | 25.5 | 3.0 | 20.5 |
| Phoenix, Ariz. | 18.0 | 22.0 | 4.0 | 20.0 |

Above prices are at company's plant or depots as company does not operate stations. A 4-cent per gallon discount is given dealers and customers taking tank wagon lots except in Phoenix where discount is 1 cent.

### NEBRASKA

**Standard Oil Co. (Nebraska)**

| | Gasoline | | | Kero. |
|---|---|---|---|---|
| | Tank wagon | Service station | incl'ds tax of | tank wagon |
| Omaha | 18.25 | 20.25 | 4.0 | 13.25 |
| McCook | 19.75 | 21.75 | 4.0 | 14.75 |
| Norfolk | 18.75 | 20.75 | 4.0 | 13.75 |
| N. Platte | 19.75 | 21.75 | 4.0 | 14.50 |
| Scottsbluff | 19.75 | 21.75 | 4.0 | 14.25 |

### OHIO

**Standard Oil Co. (Ohio)**

| | Gasoline | | | Kero. |
|---|---|---|---|---|
| | Tank wagon | Service station | incl'ds tax of | tank wagon |
| Ohio points* | 18.0 | 19.0 | 4.0 | †12.0 |

*Dealers and commercial accounts 2 cents under tank wagon.

†Service station price 14 cents.

### CENTRAL SOUTH DISTRICT

**Standard Oil Co. (Louisiana)**

| | Gasoline | | | Kero. |
|---|---|---|---|---|
| | Tank wagon | Service station | incl'ds tax of | tank wagon |
| N. Orleans, La.* | 15.0 | 15.0 | 5.0 | 12.0 |
| Baton Rouge | 15.0 | 16.0 | 4.0 | 14.0 |
| Alexandria | 16.6 | 18.0 | 5.0 | 14.0 |
| Lafayette† | 17.0 | 19.0 | 5.0 | 14.0 |
| Lake Charles† | 16.0 | 18.0 | 5.0 | 14.0 |
| Shreveport | 15.0 | 17.0 | 4.0 | 14.0 |
| Knoxv'le, Tenn. | 19.0 | 20.0 | 5.0 | 16.0 |
| Memphis | 17.0 | 19.0 | 5.0 | 12.5 |
| Chattanooga | 19.0 | 20.0 | 5.0 | 16.0 |
| Nashville | 18.0 | 20.0 | 5.0 | 16.0 |
| Bristol | 19.0 | 21.0 | 5.0 | 14.0 |
| Lt. Rock, Ark. | 16.0 | 16.0 | 5.0 | 13.0 |

*Tax of 5 cents includes city tax of 1 cent. Louisiana kerosene prices include 1-cent state tax and 1-cent parish tax.

†Includes 1-cent parish tax.

### TANK WAGON CHANGES

Standard Oil Co. of New Jersey reduced gasoline tank wagon price 1 cent and service station 1.7 cents at Charlotte, N. C., March 29.

Standard Oil Co. of Kentucky reduced gasoline tank wagon and service station prices 2 cents at Augusta, Ga., March 29.

Magnolia Petroleum Co. reduced kerosene tank wagon price 1 cent at El Paso, Tex., March 20. Same company advanced gasoline tank wagon 2 cents and service station 3 cents at Muskogee, Okla., March 26. Same company reduced gasoline tank wagon and service station prices 2 cents at Little Rock, Ark., March 29.

Standard Oil Co. of Louisiana advanced gasoline service station price 1 cent at Baton Rouge, La., effective April 1.

## CITIES SERVICE OPTION ON GERMAN DRILLING

The founding of the North European Oil Corp. in Delaware for the purpose of developing the petroleum possibilities of Northwestern Germany has been reported. Most of the district to be developed lies in a triangular area of which the cities of Hamburg, Bremen and Hanover represent the points. Chester Naramore, formerly chief of the petroleum division of the United States Bureau of Mines is president of the corporation. Directors include F. Y. Robertson, vice president of the United States Smelting & Refining Co., F. de C. Sullivan, president of Oil Shares, Inc., and Byron E. Hepler, vice president and treasurer of the Hope Engineering & Supply Co.

The Cities Service Co. and the Henry L. Doherty interests form the American oil group which has the option on control of the North European Oil Corp. Geological formations similar to those in the Gulf Coast and Mid-Continent areas in the United States are understood to have been discovered by the geologists who have been prospecting the German lands.

## ADVANCE FUEL OIL

NEW YORK, Apr. 8.—The Standard Oil Co. of New Jersey today advanced bunker fuel oil 10 cents per barrel at Bayonne, N. J. The new price is $1.15. This is the first advance in East Coast fuel oil prices in over two years.

## CRUDE OIL PRICES

(Continued from Page 167)

| | |
|---|---|
| Cat Creek (Montana) (Feb. 15, 1930) | 1.45 |
| Pondera (Montana) (Feb. 15, 1930) | 1.80 |
| Sunburst (Montana) (Feb. 15, 1930) | 1.45 |
| Torchlight (May 21, 1929) | 1.65 |
| Hogback (New Mexico) (Feb. 15, 1930) | 1.40 |
| Artesia (New Mexico) (Feb. 15, 1930) | 1.00 |

Note—Salt Creek, Osage, Cat Creek, Greybull and Hogback posted by Midwest Refining Co., and the remainder by the Ohio Oil Co. Both companies posted Grass Creek light and Elk Basin.

### SOUTH CENTRAL AND SOUTHWEST TEXAS

| | |
|---|---|
| Darst Creek (Jan. 15, 1930)* | $1.05 |
| Luling (Jan. 16, 1930)* | .75 |
| Mirando (Jan. 15, 1930)† | .75 |
| Salt Flat (Jan. 15, 1930)§ | 1.05 |
| Rockdale Minerva (April 15): | |
| Below 28 gravity | 1.25 |
| 28-38.9 gravity | 1.27 |
| 39-39.9 gravity | 1.29 |
| 40 and above | 1.31 |
| Thrall‡ | ... |
| Callihan (May 15) | 1.75 |
| Lytton Springs (Lockhart) | See gravity table |
| Somerset | See gravity table |

*Posted by Magnolia Petroleum Co. †Magnolia Petroleum Co., Humble Oil & Refining Co., Crown Central Pipe Line Co. ‡Thrall prices same as North Central Texas less 19½ cents per cwt. freight. §Humble Oil & Refining Co.

### EASTERN STATES

**Joseph Seep Purchasing Agency**

(Effective Feb. 17, 1930)

| | |
|---|---|
| Penna Grade Oil in New York Transit Lines (New York) | $2.80 |
| Bradford District Oil in National Transit Lines (Pennsylvania) | 2.80 |
| Penna Grade Oil in National Transit Lines (Pennsylvania) | 2.80 |
| Penna Grade Oil in Southwest Pennsylvania Lines (West Virginia) | 2.75 |
| Penna Grade Oil in Eureka Pipe Line Lines (Pennsylvania) | 2.65 |
| Penna Grade Oil in Buckeye Pipe Line Lines (Ohio) | 2.45 |
| Cabell Grade Oil in Eureka Pipe Line Lines (West Virginia) (May 22, 1929) | 1.75 |
| Corning 35-cent Grade Oil in Buckeye Pipe Line Co.'s Line (Feb. 17, 1930) | 1.55 |
| Corning 25-cent Grade Oil in Buckeye Pipe Line Co.'s Lines (Feb. 17, 1930) | 1.65 |
| Somerset Oil in Cumberland Pipe Line Lines (Kentucky) (Feb. 17, 1930) | 1.37 |
| Ragland Grade Oil in Cumberland Pipe Line Lines (Kentucky) (Jan. 29) | .60 |
| Wayne District Oil in Cumberland Pipe Lines (Feb. 17, 1930) | 1.24 |

### MIDDLE WESTERN STATES

**Ohio Oil Co.**

(Effective Feb. 15, 1930)

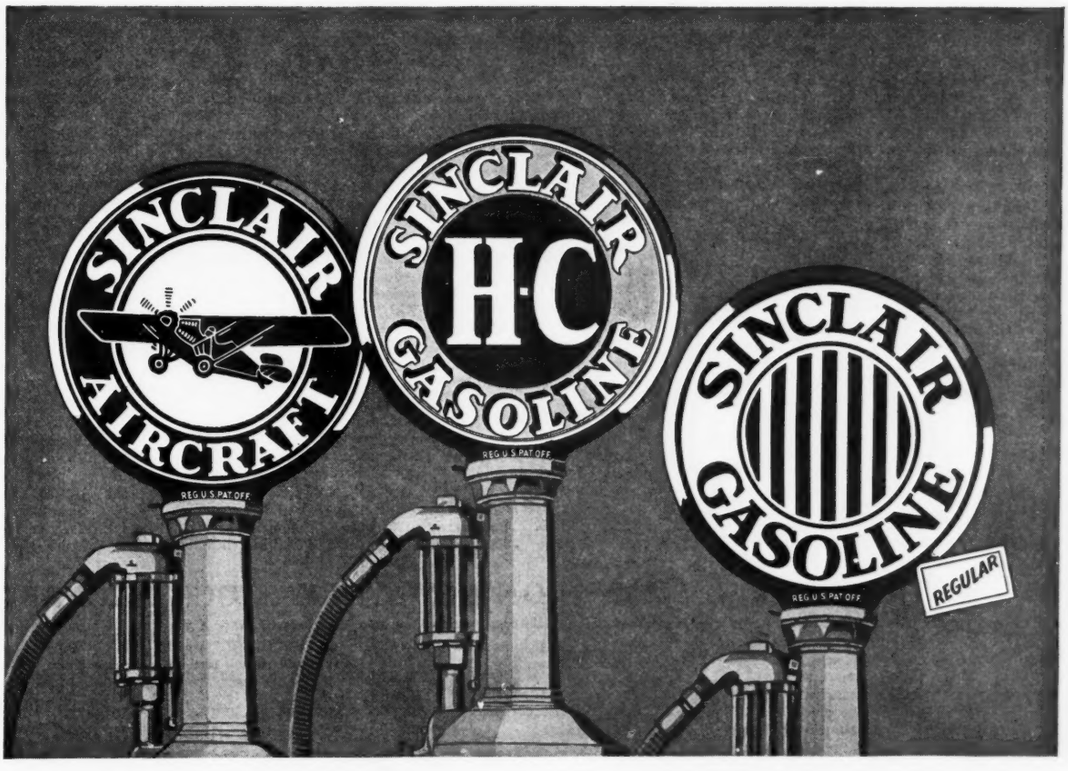
| | |
|---|---|
| Lima | $1.65 |
| Wooster | 1.75 |
| Illinois | 1.60 |
| Indiana | 1.45 |
| Princeton | 1.60 |
| Plymouth | 1.18 |
| Waterloo (Nov. 17, 1926) | 1.35 |
| Western Kentucky | 1.50 |
| Dundee, Mich. (Feb. 13, 1930)‖ | |
| .....Same as Mid-Continent gravity scale | |
| Upper and Lower Traverse sands, Mich.‖ | |
| .....Same as Mid-Continent gravity scale | |
| Midland, Mich. (Feb. 6, 1930)* | 1.35 |
| Saginaw, Mich., Saginaw sand (Feb. 10)† | 1.89 |
| Saginaw, Mich., Berea sand (Feb. 10) | 1.79 |
| Cumberland, Clay, Barren, Clinton and Monroe Counties, Kentucky ( Mar. 15)‡ | 1.50 |
| Oil in line in Stoll Oil Refinery Co. in Oil City, Ky. (Feb. 19, 1930)§ | 1.45 |
| Oil Springs (Canada) (Feb. 15, 1930)¶ | 2.12 |
| Petrolia (Canada) (Feb. 15, 1930)¶ | 2.15 |

*Posted by Pure Oil Co. †Posted by Sun Oil Co. ‡Posted by Paragon Development Co. §Posted by Stoll Oil Refining Co. ¶Posted by Imperial Oil Co., Ltd. ‖Posted by Standard of Indiana for boat shipment.

### MEXICAN CRUDE

| | |
|---|---|
| Panuco* | $ .67 |

*Based on February transactions.




# Here's the new way to sell gasoline . . . the *sure way* to increase your gallonage . . .

# SINCLAIR THREE-GAS SERVICE

**Today, with so many different engines on the road and so many different motoring conditions everywhere, no one kind of gasoline can be best for all engines. Today, it takes three different *kinds* to meet all demands—and you can satisfy these three demands with Sinclair Three Gas Service.**

**Here are the three kinds of gasolines for all the different motoring needs.**

**For the motorist who wants quick starting, zooming acceleration, flashy stop-and-go action in traffic, with brilliant performance along the highway, here's Sinclair Aircraft Gasoline, the *Ace* of high test gasolines. Sinclair Aircraft is the Ace of high test gasolines because it is specially manufactured at Sinclair Refineries, meeting the requirements of the Federal Specifications Board for Aviation Gasoline—domestic grade—and gives sustained power. Due to its careful fractionation it is free from dissolved gases which cause gas locks, uneven distribution, galloping and engine balk.**

**Or if a customer wants high-compression performance, who wants to stop knocks and take the hills in high—without a complaint from the engine, here's H-C Gasoline, *all* gasoline—nothing added.**

**And if he prefers to pay three cents less per gallon, here's Sinclair Regular Gasoline full of eager power—full, too, of economy and mileage. The quality gasoline at a popular price.**

**They're *all* gasoline—nothing added—and they are three remarkable fuels! Let your customers *select* their gasoline from Sinclair Three-Gas Service—you'll get their business and keep it!**

**SINCLAIR REFINING COMPANY, INC.**
**45 Nassau Street, New York**
***Atlanta, Chicago, Houston, Kansas City***

# Report of Standard Oil Co., California

## Confirmation of Importance of Holdings at Kettleman Hills Outstanding Feature of Year. Oil Securities Market

The report of Standard Oil Co. of California for the year ended December 31, 1929, shows a net income of $46,633,490 after depreciation, depletion, federal taxes, etc., equivalent to $3.63 a share on 12,845,980 no-par shares of stock. This compares with $46,083,817 or $3.66 a share on 12,594,098 shares in 1928.

The annual report discusses the situation in Kettleman Hills where Standard Oil Co. of California holds practically one-half of the acreage and says that the outstanding feature of the year was the confirmation of the importance of the company's holdings. The company states: "It is estimated that in the north dome of Kettleman Hills alone the company owns 6,000 acres of proved oil lands in addition to its holdings in the middle dome of the field. These lands are carried on the books of the company at $7 an acre."

Concerning the new California gas conservation act the report says: "It is believed by the state's attorneys and other responsible lawyers that the statute will be sustained by the highest court, and in such event it should prove a valuable factor in conservation and a precedent for other oil producing states."

In addition to acquiring Pacific Public Service Co., of which the Coast Counties Gas & Electric Co., a distributor of gas, is a subsidiary, the company also made a long-term contract for the sale of gas from Kettleman Hills to Pacific Gas & Electric Co., thus assuring itself of an outlet for its natural gas.

The company's total production of crude for the year was 51,534,160 bbls., an average of 141,190 bbls. daily. Total potential production, actual and shut in, as of December 31, 1929, was 192,513 bbls. daily, exclusive of a large pinched-back production in Texas. Production in California was 122,060 bbls. daily.

### Amerada Corp.

The net earnings of the Amerada Corp. for the past year after all charges including depletion, depreciation, drilling expenses, taxes, etc., amounted to $2,758,900.15 or $2.99 per share compared with $2,214,109.63 or $2.40 per share during 1928. Current assets, including cash of $6,440,694.21, aggregate $9,290,228.37. Toward the end of the year, the corporation purchased in the open market and at prices below book value, 35,800 shares of its stock which will be offered for sale to officers and employes of Amerada Corp. and its subsidiaries. The regular quarterly dividend of 50 cents per share was paid throughout 1929.

### Cosden Oil

Report of Cosden Oil Co. and subsidiaries for year ended December 31, 1929, shows net income of $1,348,255 after expenses, depletion, depreciation, federal taxes, etc., equivalent after 7 per cent preferred dividends requirements, to $4.65 a share on 240,000 average no-par shares of common stock outstanding during the year and to $3.72 a share on 300,000 shares issued including 25,000 held subject to agreement with J. S. Cosden.

### Indiana Stock Purchase

Directors of the Standard Oil Co. of Indiana have fixed at $53 a share the price at which stock will be sold to employes in the next year in accordance with the stock purchasing plan, which settles the price for each year at the average market price for the six months preceding April 1. Standard of Indiana is currently quoted at $58. The company contributes one-third of the amount an employe pays for stock, up to one-tenth of his annual pay. On the basis fixed for the next year the actual cost of stock to employes will be about $35.30. Seventeen thousand employes of the Standard of Indiana and subsidiaries saved and turned in $2,900,000 for investment in the year ended March 31, 1930. Company additions together with dividends and other increases, raised the fund to a total of $4,500,000, invested in stock which the employes will own. The third stock purchase plan became effective on April 1, 1929, and will terminate on March 31, 1932.

Under the original plan, which started in 1921 and ran five years the trustees distributed 384,638 shares. The second plan was started in 1926, and after three years 238,087 shares were distributed. While some employes have since disposed of stock acquired under those plans, 470,070 shares, or about 75 per cent of the total subscribed, were still held on December 31, 1929. This fact, together with the enthusiasm shown for

## TRANSACTIONS IN OIL SHARES ON NEW YORK STOCK EXCHANGE

**Quotations Compiled by Francis, Bro. & Co., Members of the New York Stock Exchange and Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.**

| 1930 High | 1930 Low | Week ended April 2 Sales | Week ended April 2 High | Week ended April 2 Low | Week ended April 2 Close | Stocks— | | Outstanding capital | Par value | Div. rate | Last paid | 1927 High | 1927 Low | 1928 High | 1928 Low | 1929 High | 1929 Low |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 29¾ | 18 | 5,300 | 28⅛ | 27⅛ | 27⅛ | Amerada Corp. | (sh) | 922,075 | N.P. | 50cQ | 1-31-30 | 37⅝ | 27⅝ | 43⅞ | 27⅛ | 42⅝ | 17⅛ |
| 37 | 20½ | 1,700 | 35¾ | 34 | 34¼ | American Republics Corp. | (sh) | 209,180 | N.P. | ..... | 3-20-29 | 82½ | 35⅛ | 85 | 51⅜ | 64¾ | 12½ |
| 45 | 32½ | 20 | 45 | 45 | 45 | Associated Oil | | $57,260,300 | $25 | 50cQ | 12-31-29 | 50¼ | 35 | 53⅜ | 37½ | 47¼ | 34½ |
| 50⅞ | 36¼ | 18,000 | 50 | 48⅛ | 48¼ | Atlantic Refining | | $50,000,000 | $25 | 25cQ | 12-16-29 | 131⅜ | 104 | 66⅜ | 50 | 77⅞ | 30 |
| 34 | 20½ | 17,300 | 33½ | 30⅛ | 31¼ | Barnsdall Corp. | | $45,236,650 | $25 | 50cQ | 12- 7-29 | 35½ | 20¾ | 53 | 20 | 49⅛ | 20 |
| 29¼ | 19½ | 19,500 | 29¼ | 28 | 28¼ | Continental Oil of Delaware | (sh) | 4,741,554 | N.P. | ..... | 3-31-27 | .. | .. | .. | .. | 47⅛ | 18 |
| 70⅜ | 49⅛ | 8,800 | 68¼ | 65 | 65½ | General Asphalt | | $20,785,400 | N.P. | 50cQ | ..... | 96¾ | 65 | 94⅞ | 68 | 94⅜ | 42¼ |
| 110 | 52¼ | 6,600 | 104 | 99⅞ | 100 | Houston Oil | | $25,000,000 | $100 | ..... | ..... | 175¾ | 60⅛ | 167 | 79 | 109 | 26 |
| 31¾ | 20¼ | 25,500 | 31¾ | 29⅞ | 30 | Independent Oil & Gas | (sh) | 1,333,572 | N.P. | 50cQ | 1-31-30 | 32¾ | 17⅝ | 38⅜ | 21¾ | 39⅜ | 17⅜ |
| 28⅜ | 17¾ | 13,900 | 24⅝ | 23⅜ | 23½ | Indian Refining | | $12,307,370 | $10 | ..... | 5-31-24 | 12⅛ | 7⅝ | 39⅝ | 9 | 53 | 13⅛ |
| 25½ | 21¼ | 200 | 25 | 25 | 25 | Lago Oil & Transport | (sh) | 3,992,122 | N.P. | ..... | 5- 1-27 | 37¾ | 20½ | 39⅛ | 27⅜ | 38⅜ | 16½ |
| 11¼ | 8 | 800 | 11⅛ | 10⅛ | 10⅛ | Louisiana Oil Refining | (sh) | 1,190,063 | N.P. | ..... | ..... | 18⅛ | 10 | 19¾ | 9⅜ | 18 | 7 |
| 10⅜ | 5⅛ | 100 | 8½ | 8½ | 8½ | Maracaibo Oil | (sh) | 330,000 | N.P. | ..... | ..... | 22¾ | 12 | 25½ | 12½ | 18½ | 5⅛ |
| 35⅞ | 16⅛ | 19,300 | 33¾ | 32 | 32 | Mexican Seaboard | (sh) | 1,276,873 | N.P. | ..... | 12-15-20 | 9¼ | 3 | 73 | 4⅝ | 69⅜ | 9⅛ |
| 32⅞ | 23½ | 4,400 | 32⅞ | 31⅛ | 31⅛ | Mid-Continent Petroleum | (sh) | 1,857,912 | N.P. | 50cQ | 12-15-29 | 39⅜ | 25½ | 44½ | 25⅛ | 39⅞ | 22⅛ |
| 2½ | ⅞ | 2,700 | 2 | 1⅝ | 1¾ | Middle States, ctfs.§ | | $24,298,850 | $10 | ..... | 7- 1-23 | 3¾ | 1⅝ | 7¾ | 2⅜ | 5⅛ | ⅜ |
| 60⅛ | 51⅛ | 300 | 55¼ | 55 | 55¼ | Pan American P. & T. | | $50,084,700 | $50 | ..... | 10-20-27 | 65⅞ | 40⅛ | 54⅞ | 38¼ | 69 | 40½ |
| 60¼ | 50½ | 1,200 | 56½ | 55¼ | 55¼ | Pan American P. & T. "B" | | $121,105,050 | $50 | ..... | 11-15-24 | 66⅜ | 40¼ | 58⅞ | 37¾ | 69¼ | 40½ |
| | | No sales. | | | | Pan American Western B§ | | $400,000 | N.P. | ..... | 1-30-27 | 37⅞ | 16¾ | 28⅜ | 15½ | 18½ | 13⅜ |
| 8⅞ | 4⅛ | 400 | 7¼ | 7⅛ | 7⅛ | Panhandle P. & R. | (sh) | 199,370 | N.P. | ..... | ..... | 18⅞ | 8 | 21¾ | 11½ | 15¼ | 3 |
| 51½ | 47½ | 100 | 51½ | 51½ | 51½ | Panhandle P. & R. pfd. | | $2,564,400 | $100 | ..... | 7- 2-23 | 83 | 54 | 108 | 70 | 76 | 47½ |
| 39½ | 29½ | 5,800 | 39¼ | 38⅛ | 38⅝ | Phillips Petroleum | (sh) | 2,406,796 | N.P. | 50cQ | 1- 2-30 | 60¼ | 36¼ | 53⅞ | 35¼ | 47 | 24¾ |
| 2½ | 1 | 800 | 2⅛ | 2 | 2⅛ | Pierce Oil Corp. | | $29,622,831 | $25 | ..... | ..... | 1⅛ | ½ | 5¼ | ½ | 3⅜ | 1 |
| 6⅞ | 2¼ | 9,500 | 5⅞ | 5½ | 5⅞ | Pierce Petroleum | (sh) | 2,500,000 | N.P. | ..... | ..... | 5½ | 2½ | 7 | 3½ | 5⅞ | ½ |
| 54 | 45 | 1,000 | 53 | 52½ | 52⅝ | Prairie Oil & Gas | | $61,720,125 | $25 | 50cQ* | 12-31-29 | 55½ | 45⅝ | 68 | 46 | 65⅝ | 40½ |
| 60 | 54⅛ | 2,400 | 57 | 56 | 56 | Prairie Pipe Line | | $101,250,000 | $25 | 75cQ† | 12-31-29 | 190 | 130¾ | 280 | 172 | 65 | 45 |
| 11⅞ | 6½ | 1,400 | 11⅝ | 10⅞ | 10⅞ | Producers & Refiners | | $37,438,950 | $50 | ..... | 9-15-23 | 33⅞ | 16¾ | 29⅞ | 16 | 25⅞ | 4 |
| 40 | 31 | 110 | 35 | 35 | 35 | Producers & Refiners pfd. | | $2,845,350 | $50 | ..... | 5- 1-25 | 50 | 36⅞ | 49⅝ | 41 | 46¾ | 25½ |
| 25⅞ | 21⅛ | 4,400 | 25⅞ | 25¼ | 25¼ | Pure Oil | | $75,959,250 | $25 | 37½cQ | 12- 2-29 | 33½ | 25 | 31⅝ | 19 | 30¾ | 20 |
| 28¼ | 22¼ | 12,900 | 27⅝ | 26¾ | 26⅞ | Richfield Oil | | $47,964,650 | $25 | 50cQ | 11-15-29 | 28⅝ | 25⅜ | 56 | 23 | 49⅝ | 20 |
| 25⅝ | 16½ | 15,200 | 25⅝ | 24⅝ | 24¾ | Rio Grande Oil | (sh) | 1,200,000 | N.P. | $2A | 7-25-29 | .. | .. | 37½ | 32 | 42½ | 15 |
| 54¾ | 49¼ | 8,400 | 54¾ | 53¾ | 53⅞ | Royal Dutch, N. Y. | (sh) | 611,303 | $1.873 | ..... | 9-13-29 | 54½ | 44¼ | 64 | 44⅝ | 64 | 43⅛ |
| 47 | 42⅜ | 22,400 | 45½ | 45½ | 45½ | Shell Transport & Trading Co. | | £19,654,274 | £1 | $1.45 | 7-23-29 | 48⅝ | 40½ | 47⅞ | 41⅜ | 57½ | 40⅝ |
| 24 | 21 | 4,100 | 24 | 23¾ | 23¾ | Shell Union Oil | (sh) | 13,000,000 | N.P. | 35cQ | 12-31-29 | 31¾ | 24⅝ | 39¼ | 23¼ | 31¾ | 19 |
| 37 | 22⅞ | 8,400 | 34⅛ | 32 | 32 | Simms Petroleum | | $8,060,380 | $10 | 40cQ | 12-14-29 | 95⅜ | 14¼ | 27¼ | 18⅛ | 40⅛ | 15 |
| 31⅜ | 21⅝ | 50,900 | 31⅜ | 29⅝ | 30⅛ | Sinclair Consolidated | (sh) | 5,500,000 | N.P. | 50cQ | 1-15-30 | 22⅜ | 15 | 46¾ | 17⅜ | 45 | 21 |
| 111⅞ | 109 | 300 | 111⅞ | 111 | 111⅞ | Sinclair Consolidated pfd. | | $16,025,250 | $100 | $2Q | 11-15-29 | 104½ | 97 | 110 | 102½ | 111 | 103 |
| 39 | 28⅞ | 12,100 | 39 | 37¼ | 38 | Skelly Oil | | $27,237,750 | $25 | 50cQ | 12-16-29 | 37⅜ | 24⅛ | 42⅝ | 25 | 40½ | 28 |
| 69½ | 55½ | 13,000 | 69½ | 67½ | 67¾ | Standard Oil of California | (sh) | 12,594,098 | N.P. | 62½cQ | 12-16-19 | 60¾ | 50⅜ | 80 | 53 | 81⅞ | 51½ |
| 40¾ | 37¼ | 3,400 | 39⅞ | 38 | 38 | Standard Oil of Kansas | | $8,000,000 | $25 | 50cQ | 12-16-29 | 20⅞ | 14⅝ | 37⅜ | 15 | 33⅜ | 18 |
| 76⅞ | 58 | 42,300 | 76⅞ | 74¼ | 74⅞ | Standard Oil of New Jersey | | $620,079,800 | $25 | 25cQ* | 12-16-29 | 41⅜ | 35⅛ | 59⅜ | 37¾ | 83 | 49 |
| 36 | 31¼ | 13,200 | 36 | 35⅝ | 35⅞ | Standard Oil of New York | | $434,094,575 | $25 | 40cQ | 12-16-29 | 34⅛ | 29¾ | 44¼ | 28¾ | 48⅛ | 31⅜ |
| 65¾ | 53 | 2,100 | 64 | 64 | 64 | Sun Oil | (sh) | 1,297,627 | N.P. | 25cQ | 12-16-29 | 34⅞ | 30 | 77 | 31½ | 86⅜ | 55 |
| 8⅝ | 5¼ | 2,100 | 7⅝ | 7⅜ | 7⅜ | Superior Oil Corp. | (sh) | 2,324,938 | N.P. | ..... | 12-20-20 | .. | .. | .. | .. | 24 | 5¼ |
| 59⅜ | 50⅞ | 10,000 | 59⅜ | 57¾ | 57¾ | The Texas Corporation | | $211,076,650 | $25 | 75cQ | 1- 1-30 | 58 | 45 | 74¾ | 50 | 71⅞ | 50 |
| 14½ | 8⅞ | 800 | 12⅞ | 12½ | 12½ | Texas Pacific Coal & Oil Co. | | $8,380,340 | $10 | 2½%A‡ | 12-31-29 | 18⅞ | 12 | 26⅝ | 12¼ | 23⅞ | 9½ |
| 28 | 19½ | 300 | 28 | 28 | 28 | Tide Water Oil | (sh) | 2,191,759 | N.P. | 20cQ | 12-31-29 | 29⅛ | 19 | 41½ | 19⅝ | 40 | 14 |
| 92 | 86⅛ | 700 | 92 | 90⅛ | 92 | Tide Water 5½% pfd. | | $20,705,200 | $100 | $1.25Q | 11-15-29 | 90⅛ | 85 | 100⅛ | 86 | 97½ | 85¼ |
| 16¾ | 10¾ | 11,200 | 16⅝ | 16 | 16⅛ | Tide Water Associated | (sh) | 4,796,158 | N.P. | 30cS | 2-15-30 | 19⅛ | 15¾ | 25 | 14¾ | 23½ | 10 |
| 89¾ | 78 | 200 | 87⅞ | 87¼ | 87¼ | Tide Water Associated pfd. | | $72,844,300 | .... | $1.50Q | 2- 2-30 | .. | .. | .. | .. | 90⅞ | 74⅛ |
| 20⅞ | 16¼ | 11,300 | 19¾ | 19 | 19⅛ | Transcontinental Oil | (sh) | 3,742,029 | N.P. | ..... | ..... | 10⅜ | 3¾ | 14¾ | 7¼ | 15¼ | 5⅛ |
| 47⅜ | 41⅛ | 1,400 | 47 | 46¼ | 46¼ | Union Oil of California | | $94,798,100 | $25 | 50cQ | 11- 9-29 | 56½ | 39⅝ | 58 | 42⅜ | 57 | 42¼ |
| 37 | 33 | 200 | 37 | 36 | 36⅝ | Union Tank Car | | $31,061,200 | $100 | $1.25Q | 12- 2-29 | 127½ | 94 | 128⅛ | 110 | 163¾ | 121⅞ |
| 20⅞ | 16⅝ | 28,500 | 18½ | 18⅛ | 18⅜ | Warner-Quinlan | (sh) | 356,000 | N.P. | 50cQ | 1- 2-30 | 34½ | 24½ | 44⅞ | 26 | 42⅞ | 15 |
| 29½ | 26 | 100 | 29½ | 29½ | 29½ | White Eagle Oil & Refining | (sh) | 490,000 | N.P. | 50cQ | 1-20-30 | 27½ | 20 | 38 | 20⅛ | 38 | 25 |
| 18½ | 11½ | 200 | 18 | 18 | 18 | Wilcox Oil & Gas | (sh) | 2,400,000 | N.P. | ..... | 5-10-28 | .. | .. | .. | .. | 29¾ | 12⅞ |

*Plus extra dividend of 25 cents. †Plus extra dividend of 50 cents. ‡Payable in stock. §Stocks not sold since January 1, 1930.
In comparing highs and lows for the several years in the three tables it will be necessary to take into consideration cases where there have been splits in the stock.

the third plan, is viewed by the management as convincing proof of the interest employes are taking in becoming part owners. Evidence has appeared in many ways of the greater value to the company of employes who are at the same time stockholders. Trustees administering the current plan are President Edward G. Seubert, Treasurer C. B. Barkdull, and Secretary F. T. Graham.

### Standard of Ohio

President W. T. Holliday's report on the Standard Oil Co. of Ohio operations for 1929 states that consolidated gross sales for 1929 (after deduction of gasoline taxes) were $62,871,089.21 contrasted with gross sales for 1928 of $44,732,825.15, an increase of approximately 40 per cent. Net earnings, before income tax, in 1929, after deduction of minority interests, were $4,701,167.72 compared with such net earnings for 1928 of $4,325,884.88. Net earnings, after deduction of income tax and of minority interests, in 1929 were $4,202,384.56 compared with similar earnings for 1928 of $3,896,548.84. The company's net profit, after income tax and after deduction of minority interests, for 1929 represented a return of 9.97 per cent on the company's net capital and surplus (including reserve for annuities) as at the beginning of the year, compared with the similar return for 1928 of 9.7 per cent.

### Twenty Representative Stocks

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange and New York Curb, based on closing quotations for Saturday, was as follows:

| | | | |
|---|---|---|---|
| Sept. 7 | 59.16 | Dec. 18 | 49.24 |
| Sept. 14 | 60.40 | Dec. 24 | 47.36 |
| Sept. 21 | 57.93 | Dec. 31 | 48.86 |
| Sept. 28 | 58.63 | Jan. 8 | 48.56 |
| Oct. 5 | 57.00 | Jan. 15 | 48.38 |
| Oct. 12 | 59.75 | Jan. 22 | 47.13 |
| Oct. 19 | 58.70 | Jan. 29 | 47.46 |
| Oct. 26 | 54.59 | Feb. 5 | 48.13 |
| Oct. 31 | 42.29 | Feb. 12 | 47.49 |
| Nov. 8 | 48.31 | Feb. 19 | 45.85 |
| Nov. 15 | 47.61 | Feb. 26 | 46.71 |
| Nov. 22 | 47.76 | Mar. 5 | 46.79 |
| Nov. 29 | 48.60 | Mar. 12 | 48.30 |
| Dec. 4 | 50.60 | Mar. 19 | 51.00 |
| Dec. 11 | 50.51 | Mar. 26 | 51.55 |

### Skelly Oil

Report of Skelly Oil Co. and subsidiaries for year ended December 31, 1929, shows net profit of $5,786,490 after interest, taxes, depreciation and depletion, etc., equivalent to $5.28 a share (par $25) on 1,095,581 shares of stock. This compares with $4,104,376 or $3.76 a share on 1,089,570 shares in 1928.

### Empire Gas & Fuel

Empire Gas & Fuel Co. declared monthly dividends of 50 cents on the 6 per cent preferred stock, 54 1-6 cents on the 6½ per cent preferred, 58 1-3 cents on the 7 per cent preferred and 66 2-3 cents on the 8 per cent preferred stock, all payable April 1 to stock of record March 15.

### South Penn Oil

Report of South Penn Oil Co. for year ended December 31, 1929, shows net profit of $5,139,296 after depreciation and depletion, taxes, etc., equivalent to $4.28 a share (par $25) on 1,200,000 shares of capital stock. This compares with $3,911,165, or $4.89 a share on 800,000 shares in 1928.

## INDEPENDENT OILS ON NEW YORK CURB

**Quotations Compiled by Francis, Bro. & Co., Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.**

| 1930 High | 1930 Low | Week ended April 2 Sales | Week ended April 2 High | Week ended April 2 Low | Week ended April 2 Close | Stocks— | | Outstanding capital | Par value | Div. rate | Last paid | 1927 High | 1927 Low | 1928 High | 1928 Low | 1929 High | 1929 Low |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ⅜ | ⅛ | 13,100 | ⅜ | ¼ | ¼ | Amer. Con. Oilfields | | $11,018,000 | $5 | ..... | ..... | 2 7/16 | .55 | 1½ | .53 | 72c | ⅛ |
| 3¼ | 1½ | 100 | 2¼ | 2¼ | 2¼ | Amer. Maracaibo | (sh) | 700,000 | N.P. | ..... | ..... | 7½ | 2¾ | 9½ | 3⅛ | 8⅝ | 1⅛ |
| 1⅜ | 1 | 100 | 1 | 1 | 1 | Argo Oil | (sh) | 683,971 | $10 | ..... | ..... | 2¾ | 1 | 4½ | 2¼ | 5 | 1½ |
| | | No sales. | | | | British American§ | | $1,311,321 | N.P. | 25cQ* | 1- 2-30 | 40 | 20½ | 55 | 32¾ | 62 | 7⅞ |
| 2⅛ | ¾ | 800 | 1⅞ | 1¾ | 1¾ | Carib. Syndicate | | $131,250 | 25c | ..... | ..... | 28¼ | 15½ | 4½ | 3⅞ | 4⅞ | 1 |
| 43⅜ | 26½ | 67,100 | 43⅜ | 41¾ | 41⅞ | Cities Service | (sh) | 24,290,359 | N.P. | 30cA† | 1- 2-30 | 58¾ | 40¼ | 90⅞ | 54 | 68⅛ | 20 |
| 93⅞ | 88 | 300 | 93¾ | 93½ | 93¾ | Cities Service pfd. | (sh) | 1,500,000 | N.P. | 50cM | 1- 2-30 | 95⅝ | 87 | 103½ | 94½ | 98¾ | 84 |
| ⅜ | ¼ | 1,800 | 5/16 | 5/16 | 5/16 | Colombia Syndicate | | $2,000,000 | $1 | ..... | ..... | 3⅞ | 1⅛ | 3¼ | .76 | 2 | ½ |
| 5⅞ | 4⅛ | 100 | 4½ | 4½ | 4½ | Cons. Royalty§ | | $5,000,000 | $10 | 15cQ | 10-25-29 | 9¾ | 6⅜ | 8⅞ | 6¼ | 11⅛ | 2½ |
| 7½ | 5⅝ | 500 | 6⅝ | 6⅝ | 6⅝ | Creole Petroleum | (sh) | 5,977,873 | N.P. | ..... | ..... | 14⅞ | 9½ | 17½ | 9½ | 11¾ | 5⅝ |
| 1 | ¼ | 500 | ¾ | ¾ | ¾ | Crown Central | (sh) | 578,000 | N.P. | ..... | ..... | 3 | .50 | 3¼ | .76 | 2½ | ⅛ |
| 11 | 7¼ | 1,300 | 10⅝ | 10 | 10 | Darby Petroleum | (sh) | 1,019,392 | N.P. | 25cQ | 1-15-30 | 12 | 4 | 33½ | 3¼ | 26 | 6½ |
| 7¾ | 4½ | 200 | 7½ | 7½ | 7½ | Derby Oil & Refining | (sh) | 500,000 | N.P. | ..... | ..... | 2½ | 74 | 2¼ | 1 | 11 | 2 |
| 40¼ | 30 | 100 | 40¼ | 40¼ | 40¼ | Derby Oil & Refining pfd. | | $48,500 | N.P. | ..... | ..... | 16¾ | 4 | 21⅛ | 7½ | 44 | 20¾ |
| 156¾ | 131¼ | 2,500 | 156¾ | 150¼ | 150¼ | Gulf Oil Corp. | (sh) | 4,504,921 | $25 | 37½cQ | 1- 1-30 | 118 | 86¼ | 165 | 101⅛ | 209 | 115 |
| 1⅜ | ¾ | 5,800 | 1⅜ | 1⅛ | 1⅛ | Intercontinental Pet. | | $5,682,000 | $5 | ..... | ..... | 2½ | .80 | 3⅜ | 1 | 2⅞ | ⅜ |
| 3 | 1⅞ | 1,300 | 2⅞ | 2⅝ | 2⅞ | Kirby Petroleum | (sh) | 750,000 | N.P. | ..... | ..... | 2¼ | 1⅛ | 3 | 1¼ | 3⅝ | 1¼ |
| 4 | ⅛ | 3,400 | 3½ | 3¼ | 3⅜ | Leonard Oil & Dev. | | $50,000,000 | $25 | ..... | ..... | 10⅞ | 5⅛ | 9⅜ | 5⅛ | 6⅛ | 1 |
| 27⅞ | 18⅝ | 1,000 | 27¾ | 27 | 27½ | Lion Oil & Refining | (sh) | 250,000 | N.P. | 50cQ | 1-31-30 | 27½ | 20 | 43⅞ | 20 | 38⅞ | 18 |
| 45⅞ | 34⅛ | 700 | 44 | 43½ | 43½ | Lone Star Gas | (sh) | 5,000,000 | N.P. | 20cQ | 12-31-29 | 59⅜ | 37 | 69⅛ | 48½ | 67⅞ | 28 |
| ⅜ | ¼ | 500 | 5/16 | 5/16 | 5/16 | Magdalena Syndicate | (sh) | 850,000 | $1 | ..... | ..... | 2⅞ | .80 | 1⅞ | .50 | 1¼ | ¼ |
| | | No sales. | | | | Margay Oils§ | | $160,000 | N.P. | 50cQ | 1-10-30 | 52 | 12 | 48½ | 32 | 38½ | 14 |
| 3½ | 2½ | 100 | 2⅞ | 2⅞ | 2⅞ | Mexico-Ohio Oil | | ..... | .... | ..... | ..... | 12½ | 5 | 8 | 2¾ | 6⅜ | 2½ |
| ¾ | ½ | 600 | ⅝ | ⅝ | ⅝ | Mountain & Gulf | | $4,000,000 | $1 | 2cQ | 1-15-30 | 1½ | 1 | 1¾ | .76 | 1½ | ¼ |
| 12 | 8 | 300 | 11½ | 11⅛ | 11⅛ | Mountain Producers | | $1,682,182 | $10 | 40cQ | 1- 2-30 | 29¼ | 22¾ | 28⅞ | 19½ | 22⅞ | 7 |
| 3½ | 2½ | 600 | 3¼ | 3 | 3 | New Bradford Oil | | $1,095,291 | $5 | 12½cQ | 1-15-30 | 5⅞ | 4⅝ | 5⅝ | 4¼ | 5 | 2¼ |
| 7¼ | 3½ | 200 | 6 | 6 | 6 | New Mex. & Arizona | | $1,000,000 | $1 | ..... | ..... | 16 | 9¼ | 11⅞ | 7½ | 9⅜ | 2¼ |
| 10⅜ | 6⅞ | 200 | 10¾ | 10¾ | 10¾ | North Central Texas | (sh) | 400,000 | N.P. | 15cQ | 12- 2-29 | 12¾ | 9½ | 14¼ | 8½ | 18½ | 6⅛ |
| 2½ | 1 | 3,100 | 2¼ | 2⅛ | 2⅛ | Pandem | (sh) | 489,875 | N.P. | ..... | ..... | 9⅜ | 3¼ | 6 | 2⅛ | 3½ | ½ |
| 4⅜ | 1⅞ | 500 | 3¾ | 3¾ | 3¾ | Pantepec Oil | (sh) | 1,506,600 | N.P. | ..... | ..... | 12⅛ | 7 | 15⅝ | 8½ | 10¼ | 1⅞ |
| | | No sales. | | | | Pennok Oil§ | | $150,000 | N.P. | ..... | ..... | 13½ | 5⅛ | 7¾ | 4⅞ | 7¾ | 4⅜ |
| 10 | 9 | 200 | 9 | 9 | 9 | Red Bank Oil | (sh) | 250,000 | N.P. | ..... | ..... | 24⅜ | 7 | 18 | 4⅞ | 16 | 9⅝ |
| 3⅜ | 2⅛ | 300 | 2⅞ | 2¾ | 2¾ | Reiter-Foster | (sh) | 388,584 | N.P. | 10cQ | 12- 2-29 | 15½ | 3½ | 12⅞ | 4⅛ | 8½ | 1⅛ |
| 4⅝ | 3⅝ | 1,000 | 4½ | 4¼ | 4½ | Ryan Consolidated | (sh) | 500,000 | N.P. | ..... | ..... | 7 | 4½ | 12 | 4⅛ | 11 | 3 |
| 2½ | 2 | 200 | 2¼ | 2¼ | 2¼ | Salt Creek Consolidated | (sh) | 1,286,300 | $10 | 10cQ | 1- 2-30 | 8 | 5¼ | 7¼ | 5½ | 5⅞ | 1⅞ |
| 14½ | 10 | 1,500 | 14½ | 14 | 14⅜ | Salt Creek Producers | (sh) | 1,496,859 | $10 | 50cQ | 2- 1-30 | 35½ | 27¼ | 35 | 23⅛ | 25⅞ | 9 |
| | | No sales. | | | | Savoy Oil | | $750,000 | $5 | ..... | ..... | 7 | 1¼ | 3½ | 1 | 2½ | ⅞ |
| | | No sales. | | | | Transcontinental pfd. | | ..... | .... | ..... | ..... | .. | .. | .. | .. | .. | .. |
| 4½ | 2¼ | 900 | 3¾ | 3⅝ | 3⅝ | Venezuelan Petroleum | (sh) | 755,090 | $5 | 5cQ | 11-15-29 | 7⅜ | 4¼ | 9⅛ | 4⅜ | 6½ | 1¾ |
| 8 | 2 | 100 | 2¾ | 2¾ | 2¾ | Woodley Petroleum | | $500,000 | $1 | ..... | ..... | 7 | 4¾ | 8¼ | 4⅞ | 9½ | 2 |
| 1⅛ | ½ | 100 | 1⅛ | 1⅛ | 1⅛ | Y Oil & Gas (new) | | $100,000 | N.P. | ..... | ..... | 6 | 1¾ | 8⅜ | 2⅛ | 2⅞ | ¼ |

*Including one-half per cent monthly in stock. †Payable monthly and a monthly stock dividend of one-half per cent. §Stocks have not sold since January 1, 1930.

## STANDARD OIL STOCKS ON NEW YORK CURB

**Quotations Compiled by Francis, Bro. & Co., Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.**

| 1930 High | 1930 Low | Week ended April 2 Sales | Week ended April 2 High | Week ended April 2 Low | Week ended April 2 Close | Stocks— | Outstanding capital | Par value | Div. rate | Last paid | 1927 High | 1927 Low | 1928 High | 1928 Low | 1929 High | 1929 Low |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 17⅝ | 12¼ | 400 | 15 | 15 | 15 | Anglo-American Oil (vot. C.O.D.) | £4,192,635 | £1 | .36⅔ | 11-27-29 | 21⅝ | 17⅞ | 22⅝ | 14⅞ | 17 | 11 |
| 1 | ½ | 200 | 1 | 1 | 1 | Atlantic Lobos | ..... | .... | ..... | ..... | .. | .. | .. | .. | .. | .. |
| 25 | 23¼ | 100 | 23¼ | 23¼ | 23¼ | Borne Scrymser | $1,000,000 | $25 | $1S.A. | 10-15-29 | 69 | 50 | 56½ | 44½ | 46½ | 25 |
| 69 | 61⅞ | 400 | 62 | 61⅞ | 61⅞ | Buckeye Pipe Line | $10,000,000 | $50 | $1Q | 12-14-29 | 60 | 45 | 76 | 53 | 74¼ | 55 |
| 170 | 155 | 500 | 168 | 165 | 165 | Chesebrough Mfg. | $3,000,000 | $25 | $1Q* | 12-30-29 | 126 | 76½ | 161 | 117 | 210 | 130 |
| 17½ | 12⅛ | 600 | 17½ | 17 | 17½ | Continental Oil | $36,057,840 | $10 | ..... | 12-15-27 | 22⅝ | 16¼ | 23 | 16 | 29 | 10 |
| | | No sales. | | | | Cumberland Pipe Line | $1,500,000 | $50 | $1Q | 12-15-29 | 137 | 89 | 114 | 67 | 75¾ | 40 |
| 54¾ | 44 | 100 | 44 | 44 | 44 | Eureka Pipe Line | $5,000,000 | $100 | $1Q | 11- 1-29 | 68½ | 47 | 88 | 64⅛ | 70½ | 42 |
| | | No sales. | | | | Galena Signal Oil, ctfs. of dep. | $16,000,000 | $100 | ..... | ..... | 13½ | 3½ | 13 | 4¼ | 6½ | 3 |
| 116⅞ | 78 | 2,000 | 116⅞ | 113¾ | 115 | Humble Oil & Refining | $74,103,300 | $25 | 50cQ | 1- 1-30 | 68½ | 54 | 114¾ | 59¼ | 128 | 74⅛ |
| 311 | 305 | 50 | 306¼ | 306¼ | 306¼ | Illinois Pipe Line | $20,000,000 | $100 | $10S.A. | 12-16-29 | 182 | 123¾ | 290½ | 176½ | 340½ | 260 |
| 28 | 22½ | 1,200 | 27⅜ | 27 | 27¼ | Imperial Oil Co., Ltd. | 26,421,768 | N.P. | 12½cQ | 12- 2-29 | 64⅜ | 37⅜ | 104 | 56¾ | 41 | 22 |
| 41 | 37⅞ | 600 | 38½ | 37⅞ | 37⅞ | Indiana Pipe Line | $3,000,000 | $10 | 50cQ‡ | 2-15-30 | 94½ | 61 | 91⅞ | 74⅜ | 41⅞ | 26 |
| 23 | 17⅞ | 1,400 | 22½ | 22 | 22½ | International Pet. | 14,247,088 | N.P. | 12½cQ | 12-16-29 | 29 | 28¼ | 55 | 35 | 30⅜ | 15 |
| 22⅜ | 19⅞ | 100 | 20¼ | 20¼ | 20¼ | National Transit | $6,362,500 | $12.50 | 25cQ‡ | 12-16-29 | 24 | 13½ | 32⅜ | 19⅜ | 25⅛ | 10½ |
| 18¼ | 14 | 100 | 14 | 14 | 14 | New York Transit | $1,000,000 | $10 | 40cQ† | 1-15-30 | 44½ | 31¼ | 75 | 38½ | 17½ | 10 |
| | | No sales. | | | | Northern Pipe Line§ | $2,000,000 | $50 | $2S.A. | 1- 2-30 | 100 | 70 | 69 | 56½ | 63 | 41 |
| 74⅞ | 66⅛ | 200 | 74¾ | 74 | 74 | Ohio Oil | $60,000,000 | $25 | 50cQ‡ | 12-14-29 | 67⅞ | 52 | 84 | 58½ | 79⅞ | 64⅛ |
| 26 | 20 | 1,100 | 26 | 25 | 25½ | Penn Mex. Fuel | $10,000,000 | $25 | 50cQ | 12-14-29 | 39 | 12 | 84 | 28 | 44½ | 20 |
| 33 | 24⅜ | 500 | 29⅝ | 26 | 29⅝ | Solar Refining | $4,000,000 | $25 | $1.25S.A. | 12-20-29 | .. | .. | .. | .. | 50 | 29 |
| 16¾ | 13 | 100 | 15 | 15 | 15 | Southern Pipe Line | $1,000,000 | $10 | 50cQ | ..... | 27¼ | 15½ | 19 | 15 | 22½ | 13 |
| 45⅞ | 37½ | 200 | 44⅜ | 44⅜ | 44⅜ | South Penn Oil (new) | $30,000,000 | $25 | 50cQ | 12-30-29 | 41½ | 35 | 71⅞ | 36¾ | 60¼ | 35⅛ |
| 64 | 50⅛ | 100 | 50⅛ | 50⅛ | 50⅛ | Southwest Pa. Pipe Lines | $1,750,000 | $50 | $1Q | 10- 1-29 | 83 | 55½ | 102 | 70 | 70 | 60 |
| 58½ | 49⅞ | 11,600 | 58½ | 57¼ | 57⅞ | Standard Oil of Indiana | $348,175,069 | $25 | 62½cQ‡ | 12-16-29 | 81½ | 64⅝ | 95⅞ | 70⅞ | 63 | 45 |
| 37⅛ | 33¼ | 2,500 | 37 | 36½ | 36½ | Standard Oil of Kentucky | $25,654,516 | $10 | 40cQ | 12-16-29 | 130 | 111½ | 179¾ | 122¼ | 46⅞ | 29 |
| 48⅞ | 44⅛ | 1,200 | 48½ | 48½ | 48½ | Standard Oil of Nebraska | $4,649,225 | $25 | 62½cQ‡ | 12-20-29 | 49½ | 40 | 54⅞ | 39⅞ | 50¼ | 40 |
| 108½ | 81 | 50 | 97¼ | 97¼ | 97¼ | Standard Oil of Ohio | $14,000,000 | $25 | 62½cQ | 1- 2-30 | 87½ | 72 | 134 | 71 | 129 | 60 |
| | | No sales. | | | | Swan-Finch Co.§ | $861,466 | $25 | ..... | 12- 2-29 | 21 | 14½ | 23½ | 16 | 18 | 10 |
| 96⅞ | 88¼ | 4,300 | 92¾ | 91⅛ | 92 | Vacuum Oil Co. | $126,180,350 | $25 | $1Q | 12-20-29 | .. | .. | 111 | 72 | 133¾ | 75 |

*Plus 50 cents extra. †Plus 10 cents extra. ‡Plus 25 cents extra. §Stocks not sold since January 1, 1930.

## ROCKY MOUNTAIN AREA

(Continued from Page 162)

Butler Valley structure in Kane County, Utah, is drilling at 2,735 feet in red shale with 1,800 feet of water in the hole. The hole is supposed to be bottomed in or close to the Shinarump sandstone, or the conglomerate red beds and drilling will continue to the objective Kaibab limestone at 3,500 to 4,000 feet. The Utah Southern Oil Co.'s No. 1 State, SW SE Section 26-21-23, Grand County, is drilling at 1,090 feet in the McElmo shale.

### IDAHO

The Grand Teton Oil Co.'s No. 1 Blevins, SE, Section 33-5n-44, Teton County, is bottomed at 2,310 feet in a cavy sand of the Aspen formation and is running the 8¼-inch casing. Practically no water has been encountered for the past few hundred feet. Same company's No. 1 Bevan, SE, Section 27-5-44, is drilling in the Frontier and showing some gas with rainbows on the bailer.

### WYOMING

The Mountain Fuel Supply Co.'s No. 1 Union Pacific, Section 11-17-104, South Baxter Basin Field in Sweetwater County, Wyoming, which was reported a completion last week at 2,454 feet in the Dakota series as an 8,000,000-foot gas well, has increased its open flow to 23,000,000 feet. Due to the size of the well, it will not be drilled on down to the Sundance as at first contemplated. The same company's No. 1 Pat Sullivan, SW SW, Section 10-16-104, is drilling at 3,445 feet after straightening crooked hole. The Prairie Oil & Gas Co.'s No. 75-A, Section 11-26-90, Little Lost Soldier, a deep test to the Pennsylvanian which has been proven productive on the Mahoney Dome, to the east in Carbon County, is bottomed at 3,380 feet and standardizing. A large flow of oil in the Sundance was cased off and the hole is now believed to be close to the top of the Tensleep.

#### Salt Creek

The Midwest Refining Co.'s No. 29-DT, NW, Section 35-40-79, Salt Creek, the deep test, is drilling at 4,210 feet in sandy lime. At 4,125 feet it was flowing 2,300 bbls. of fluid per day of which 50 per cent was water after having cut 300 feet of the Tensleep. Water in the lower part of the Tensleep was expected, and the thickness of the saturated formation was a surprise. The Madison is the next objective.

#### Carbon County

The Producers & Refiners Corp.'s No. 2, SE NW, Section 34-26-88, Mahoney Dome, joint with the Midwest Refining Co., which swabbed 75 bbls. per day from the Tensleep at 4,600-83 feet, is being deepened and is drilling ahead at 4,695 feet. The Midwest Refining Co.'s No. 31 Eades, SW cor. SE, Section 1-18-78, Dutton Creek, is drilling at 3,260 feet with the 8⅝-inch at 3,257 feet.

#### Natrona County

The Wyalta Oil Co.'s No. 2 Smith, Section 11-38-78, east of Teapot, topped the Shannon sand at 1,045 feet and was drilled to 1,180 feet. It was given a shot of 27 quarts and is being cleaned out preliminary to putting on the pump.

#### Hot Springs County

The Midwest Refining Co.'s No. 8 Weeks, NW SE, Section 6-44-98, Wagonhound Dome, is preparing to resume at 1,540 feet after being shut down for the winter. The Ohio Oil Co.'s No. 1 Smith, SE NE, Section 9-46-99, Walker Dome, is drilling at 3,955 feet.

#### Big Horn County

The Ohio Oil Co.'s No. 1 Union Gas, NE cor., Section 22-56-97, Byron Dome, is drilling at 5,261 feet.

#### Park County

The Midwest Refining Co.'s No. 31 Frannie Oil, SW cor. NE, Section 25-58-98, Frannie Dome, is bottomed at 1,635 feet and fishing for tools. Same company's No. 31 Rosenberg, SW cor. SE, Section 24-58-98, is drilling at 375 feet after cementing the 16-inch at 120 feet.

#### Fremont County

The Producers & Refiners Corp.'s No. 10, Section 14-32-95, Sand Draw, a rotary test to sands below the big gas, is drilling at 380 feet in black shale. The Kinney-Coastal Oil Co.'s No. 1 Dykeman, SE SW, Section 22-3n-1w, Pilot Butte, is bottomed at 3,602 feet and underreaming the 6¼-inch to bottom before drilling into the Dakota. The Texas Production Co.'s No. 1 State, SW cor., Section 36-34-95, Alkali Butte, is bottomed at 3,145 feet and running the 8⅝-inch casing.

#### Uinta County

The California Co.'s No. 1 Union Pacific, NE NW, Section 7-17-116, Muddy Creek, is drilling at 4,730 feet.

### MONTANA

In the Border Field on the international boundary, the new Monalta well, No. 1 Buckley, completed last week, is the best well of the field to date. The Mid-Continent Oil Co.'s well on the American side is fishing for a lost bit and a string of tools and the Thomas Oil Co.'s well is setting casing. The Alberta Pacific Consolidated on the Canadian side is completing a rig on its No. 1 location and the Southern Alberta Oil Co. is spudding. The Commonwealth Oil Co. is also spudding and the Calmont Oil Co. is building a rig. The Cosmos Petroleum well is testing production and should complete the test by next week.

A wildcat was spudded in in Golden Valley County, central Montana, the past week, that is to test the Belmont Dome. The well is to be drilled 5,000 feet and will test all horizons to and including the Devonian.

In the Sunburst Field the deep test of the Texas Pacific company is attracting attention. This well is freakish in the extreme. Two weeks ago it found a gas flow that was afterwards declared to be only a pocket and not of commercial value. Shortly after this the well had a fishing job and a lost string of tools in the bottom of the hole. A second fishing string was lost early last week and suddenly while the crew was making a third string ready the well started to gas and blew out the fishing string of tools through the side of the derrick. The derrick will have to be rebuilt.

In Sunburst the Imperial Petroleum Co. on the Bluhm lease shot No. 7 and will make a small producer of it.

A wildcat being drilled in the Milk River Field is showing for a well according to reports. This is the Capitol Oils, Ltd.'s No. 1 Capitol, and the hole is at 3,273 feet and showing a saturated sand and some gas.

#### Rocky Mountain Production

Daily average pipe line runs from the various pools in the Rocky Mountain area for the week ending April 5:

| | |
|---|---|
| **WYOMING** | |
| Salt Creek | 31,490 |
| Frannie | 320 |
| Big Muddy | 2,070 |
| Oregon Basin | 4,700 |
| Dutton | .... |
| Elk Basin | 770 |
| Ferris | 20 |
| Grass Creek | 2,200 |
| Hamilton | 710 |
| LaBarge | 2,400 |
| Lance Creek | 170 |
| Lost Soldier | 3,110 |
| Osage | 970 |
| Poison Spider | 1,440 |
| Rock River | 2,190 |
| Rex Lake | .... |
| Lander | 400 |
| Simpson Ridge | .... |
| Teapot Dome | 40 |
| Greybull | .... |
| Total | 53,000 |
| **MONTANA** | |
| Cat Creek | 1,220 |
| Kevin-Sunburst | 5,970 |
| Pondera | 1,760 |
| Lake Basin | 70 |
| Total | 9,020 |
| **COLORADO** | |
| Moffat | 1,046 |
| Fort Collins | 1,458 |
| Florence | 637 |
| Iles | 964 |
| Tow Creek | 413 |
| Boulder | 25 |
| Rangley | 50 |
| Total | 4,593 |
| **NEW MEXICO** | |
| Hogback | 460 |
| Rattlesnake | 471 |
| Table Mesa | 110 |
| Artesia | 639 |
| Cap Rock (Maljamar) | 755 |
| Jal | 1,500 |
| Hobbs High | 173 |
| Getty | .... |
| Lea | 6,599 |
| Miscellaneous (Lea County) | 893 |
| Total | 11,600 |
| Grand total | 78,213 |

## GAIN IN REFINERY CRUDE OIL RUNS

(Continued from Page 45)

**REFINERY OPERATIONS IN NORTH CENTRAL TEXAS**

(Plants which have been in operation during the past year)

| Name and address— | Daily capacity | Runs Apr. 1 | Runs Mar. 1 |
|---|---|---|---|
| American Refining Properties, Wichita Falls | 6,000 | 2,500 | 2,400 |
| Archer Refining Co., Wichita Falls | 2,000 | 700 | 700 |
| Central Texas Refining Co., Angus | 4,000 | 1,200 | 1,200 |
| Central Texas Refining Co., Minerva | 2,000 | 600 | 600 |
| Continental Oil Co., Wichita Falls | 6,000 | 4,000 | 2,900 |
| Dale Oil & Refining Co., Electra | 4,000 | 2,500 | 2,500 |
| Empire Oil & Refining Co., Gainesville | 5,000 | 3,600 | 3,600 |
| Falls Refining Co., Wichita Falls | 2,000 | 1,000 | 1,000 |
| Gulf Refining Co., Fort Worth | 10,000 | 6,000 | 6,000 |
| Humble Oil & Refining Co., Breckenridge | 2,000 | 1,000 | 1,500 |
| Humble Oil & Refining Co., Chilton | 4,000 | 2,000 | 2,500 |
| Humble Oil & Refining Co., Neches | 5,000 | 500 | 600 |
| Iowa Park Producing & Refining Co., Iowa Park | 2,500 | 1,500 | 1,800 |
| LaSalle Petroleum Co., Burkburnett (Noble) | 3,500 | 1,000 | 1,500 |
| Macmillan Petroleum Co., Isom | 8,000 | 6,300 | 6,000 |
| Magnolia Petroleum Co., Fort Worth | 12,000 | 4,600 | 4,600 |
| Magnolia Petroleum Co. (White Eagle plant), Fort Worth) | 6,000 | 2,500 | 2,500 |
| Magnolia Petroleum Co., Corsicana | 5,000 | 4,500 | 2,600 |
| Olney Oil & Refining Co., Olney | 2,000 | 2,000 | 2,000 |
| Oriental Oil Co., Dallas | 5,000 | 3,300 | 3,300 |
| Orient Petroleum Co., Wichita Falls | 2,500 | 2,000 | (*) |
| Panhandle Refining Co., Wichita Falls | 5,000 | 3,300 | 3,300 |
| Pampa Refining Co., Pampa | 4,000 | 2,700 | 2,800 |
| Petroleum Refractionating Co., Campa | 5,000 | 4,000 | (*) |
| Phillips Petroleum Co., Isom | 10,000 | 9,500 | 7,200 |
| Primrose Refining Co., Wichita Falls | 2,500 | 2,000 | 2,000 |
| Simms Oil Co., Dallas | 5,000 | 3,100 | 3,400 |
| Star Refining & Producing Co., Fort Worth | 1,800 | 800 | (*) |
| Superior Refining Co., Tiffin | 2,000 | (*) | (*) |
| Tarrant Refining Co., Grand Prairie | 2,500 | (*) | (*) |
| Taxman Refining Co., Wichita Falls | 2,500 | 2,000 | 2,000 |
| The Texas Company, Dallas | 16,000 | 16,000 | 16,000 |
| The Texas Company, Amarillo | 4,000 | 3,000 | 3,000 |
| Tidal Western Refining Co., Burkburnett | 3,000 | 2,000 | 2,000 |
| Texas Pacific Coal & Oil Co., Fort Worth | 3,000 | 2,000 | 2,300 |
| Transcontinental Oil Co., Fort Worth | 5,000 | 4,000 | 3,500 |
| Waggoner Refining Co., Electra | 3,400 | 2,500 | 2,500 |
| Total | 166,700 | 110,200 | 99,900 |

*Shut down.

## DIESEL FUEL TO BE SOLD BY THE TEXAS COMPANY

(Continued from Page 164)

mixture of air and fuel as in the gasoline engine, and this air is compressed into a much smaller space than is possible when using a mixture of gasoline and air, which would spontaneously and prematurely detonate if compressed to this degree. The temperature of the air in the cylinder at the end of the compression stroke of a Diesel engine operating on a compression ratio of about 16 to 1 is approximately 1,000° F., which is far above the spontaneous-ignition temperature of the fuel used. Accordingly, when the fuel is injected in a highly atomized condition at some time previous to the piston reaching the end of the stroke, the fuel burns as it comes in contact with the highly heated air and the greatly increased pressure resulting from the tremendous increase in temperature brought about by this common combustion, acting on the pistons, driving the engine, as in the case of the gasoline engine.

"Summing up, the difference between the Diesel and gasoline engines starts with the fact that the gasoline engine requires a complicated ignition system in order to fire the combustionable mixture, whereas the Diesel engine generates its own heat to start combustion by means of highly compressed air. This brings about the necessity for injecting fuel in a well-atomized condition at the time the combustion is desired. The quantities of fuel injected at this time control the amount of heat generated; that is, an infinitesimally small quantity of fuel will be burned just as efficiently in the Diesel engine as a full charge of fuel, whereas in the gasoline engine the mixture ratio must be kept reasonably constant, and if the supply of fuel is to be cut down for throttling purposes the supply of air must be correspondingly reduced. It is this requirement in the gasoline engine that necessitates an accurate and sensitive fuel and air metering device, known as the carburetor."

## CONSTRUCTION-OPERATION

(Continued from Page 163)

be required to take. Moreover, a manufacturer should not be obligated to take gas under .4 of a gallon per 1,000 cubic feet if a pressure is provided at the well to an extent sufficient for gasoline extraction. If no such pressure is provided, the manufacturer should not be required to take gas yielding less than .75 of a gallon per 1,000 feet. On the other hand, the producer should be free to dispose of such gas as the manufacturer cannot take care of until such time as the manufacturer desires to call for and utilize the gas. It is only equitable that the manufacturer take gas ratably from all producers in the field from whom he has contracted gas. This paragraph recognizes the fact that flush gas cannot always be profitably utilized. It is often good economy to waste gas rather than overbuild plant capacity.

#### Residue Gas

It is potent that the producer of casinghead gas is entitled to enough residue gas to operate his lease if such gas is available after the shrinkage due to gasoline extraction and the proportionate plant use. Such shrinkage, etc., is determined by a formula developed for all characters of gas, from the leanest to the richest. If not enough gas remains, the producer will pay to the manufacturer the delivered cost of such fuel gas.

This writer does not believe the proposed contract is fair in allowing 50 per cent of the net revenue for residue gas to the producer. That revenue is too often all the profit the manufacturer makes out of his investment. There may be some cases where some participation is justified, as, for example, in an exceedingly rich gas area, or at such times as there is a very definite profit in the manufacturing business. In a lean gas area, and with prices such as have prevailed in recent years, it is questionable whether a 50-50 interest in residue gas is a fair disposition of this question.

#### Diluted Gas

The buyer of gas recognizes the right of the producer to inject air or dry gas as a means of producing his wells. The buyer is not obligated to utilize such gas, but if he does, he accounts for it on the same basis as any other casinghead gas.

(Concluded in April 17 issue)

## M. A. STANTON DIES

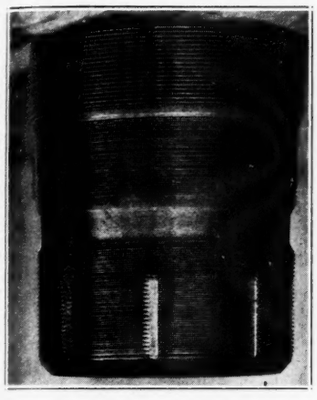
SHREVEPORT, La., Apr. 5.—M. A. Stanton, one of the old timers in the Shreveport district, has died in Hot Springs, Ark., from injuries in an automobile accident two years ago. As head of the Cypress Tank Co., and more recently as vice president of Drawford & Sebastian, contractors and producers, he was one of the familiar figures among the oil fraternity in the Shreveport division.

## MODERN METHODS USED TO SUBDUE "WILD MARY"

(Continued from Page 47)

pipe is forced as the thread is cut. In addition to this there is a lead packer that fits around the 7-inch pipe at the bottom of this die nipple and this is forced upward to cut off any oil or gas that might escape around the upper part of the 7-inch pipe and force its way downward on the outside of the pipe.

It is understood that lead packers are also used on the die nipple made in Oklahoma City and to the top of this piece of apparatus there is screwed a 9⅝-inch casing collar and above the collar there is a piece of this size casing. A master gate is attached to the top



*Cutting die for die-nipple made by Hinderliter Tool Co.*

of this length of 9⅝-inch casing and above the master gate there is a cross with two 4-inch openings closed with bull plugs and then a casing nipple and another master gate.

### Stabbing Nipple Difficult Job

It will be very easy to imagine the difficulty encountered in raising this massive assembly of valves and pipe above this heavy flow of gas and oil and then lower it so as to bring the die nipple squarely over the upper end of the 7"x14" casing nipple that formed the upper end of the flow string and especially so when it is remembered that to strike two pieces of metal together sharply might cause a spark that would set the gas on fire.

This work was done by a crew of from 50 to 75 picked men and a full joint of 9⅝-inch casing was screwed into the top of the upper master gate and left open at the upper end. Around this long piece of pipe the line was fastened and the whole string of equipment was pulled into the derrick and steadied by several lines attached to the lower portion held by men stationed around the rig.

To guide the die nipple over the 7-inch casing nipple a special type of fantail guide was used and when the die nipple was set down on the casing nipple the mast gates and their pipe was rotated and this caused the die nipple to cut threads in the upper part of the casing nipple. Once the flow of gas and oil was diverted through the gates and to the atmosphere the weight of this massive control equipment was sufficient to cause the die to cut rapidly and as it went home the lead packers were forced around the 7-inch casing nipple and the job was done. Before the master gates were closed the whole upper section of this pipe was securely lashed to the ears on the casing supports in the cellar.

The next operation will be to pump mud into the well to kill it so that it can be checked fully and if needed other valves can be added to handle the flow from the well to the oil and gas separators.

### Fire Hazard Great

This may all seem a rather simple operation to read about but to actually accomplish it took steady nerves and great caution for at all time the officials in charge have been fully aware of the immense fire hazard involved.

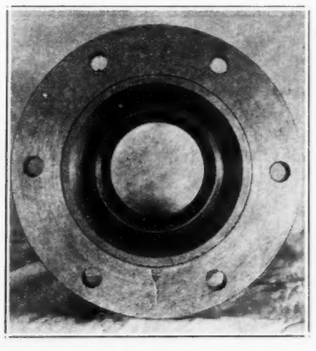
Wind has scattered this oil over a large area around the well and at times the gas has hung in a low cloud over the surrounding countryside and a flame of any kind might have brought on a fire that would have done inestimable damage. It was also necessary to remember that a large number of men were in constant danger in making these repairs and it has therefore been the policy of the company officials to use every precaution to avert such a disaster for while the damage done by the oil has been great, it is nothing compared with what might have happened had fire also taken its toll.

It has been found by checking back over the records of other large pools that nearly every one of them has had wild wells and it seems that such conditions are unavoidable for nature does not evenly distribute her store of gas and oil underground and formations are not alike in every detail.

So as the drillers work and follow well established methods that are tried and proven satisfactory in 100 wells the next one is liable to be the wild well that will cause a lot of damage, for it may drill into the formation at some high point or some place where there is unusually high pressures and the standard practice is not enough to handle it.

All operators in the Oklahoma City Pool follow about the same practice in handling their wells but it so happened that No. 1 Mary Sudik penetrated into the end of this old weathered portion of the Wilcox formation and was out of control before anyone could do anything to shut it in.

To have taken precautions to have had this well under control at all stages of drilling would have necessitated a much deeper cellar and a set of special control heads and valves below the derrick floor. This type of equipment would add very materially to the cost of drilling these wells which now cost about $155,000 each. The precautions might be justified but standard practice has not up to this time demanded that they be taken when the regular procedure has proven so effective in drilling several hundred wells in this pool. In other words the exceptions are few and with



*Bottom view of die-nipple similar to the one used in cutting thread of 7"x14" casing nipple in bringing No. 1 Mary Sudik well under control.*

all the science now at command of operators in the oil industry it is still difficult to anticipate the particular spot where these very high pressures and soft sands will be encountered and take precautions to prevent those wells from coming in out of control.

### Some Methods of Control

The above statements are not meant to imply that operators are not conversant with these facts or that engineers have not given thought to methods of drilling wells with equipment that will reduce these hazards to a minimum for it is well known that there are numerous machines and pieces of equipment on the market that will assist materially in drilling these deep wells into high pressure zones safely.

Some of this equipment will be described so that some record may be made of methods that are recommended and followed in many fields. Because this type special equipment was not used on all of the Oklahoma City Pool wells is not to be construed as a criticism, for there is a hazard in drilling at its best and this special equipment adds to the cost of wells that are already very costly to drill. The operators have used nothing but the best of material throughout as indicated by the fact that bad as this condition has been it still might have been much worse if the modern methods had not been followed.

One method of controlling one of the hazards of drilling deep wells into high

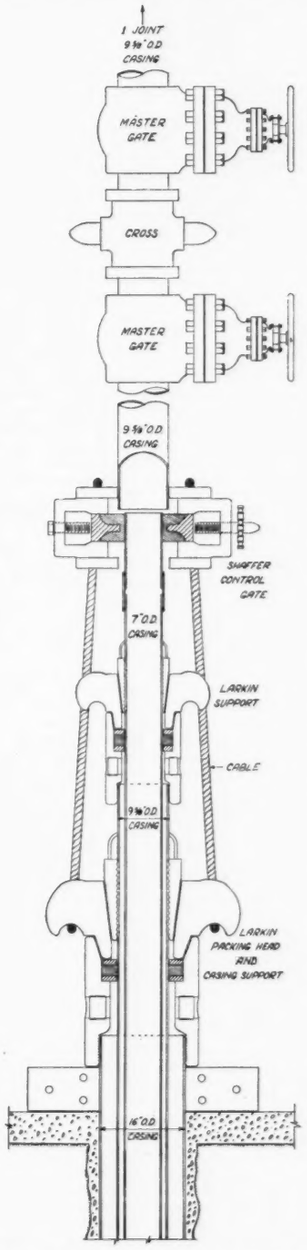



*Diagram of hookup tried on the second attempt to control No. 1 Mary Sudik well. The successful attempt was made with everything the same as shown above except that a die-nipple was substituted for the Shaffer control gate.*

pressure zones is found in the newer type of rotary outfits made by such companies as the Doheny-Stone Drill Co. of Los Angeles and Sheldon Machinery Corp. of New York City. These machines are so designed that the rotary drill pipe can be controlled at all times and can be lowered into or pulled out of the hole against high pressure from the sands.

The older method of controlling wells is by the use of control heads such as made by the leading oil well supply companies and such manufacturers as Oil Well Improvement Co., Tulsa; Cameron Iron Works, Houston; Shaffer Tool Works, Brea, Calif. and the Regan Forge & Engineering Co., San Pedro, Calif. Cuts of several of these devices are shown in this article and these companies are constantly striving to improve their equipment so that it will meet every condition.

Deep well drilling is making this constant improvement necessary as aptly illustrated by the new type "All Purpose" control casinghead with "Set Screw" top flange for oil saver and "Lubricating Flange" that is shown and is made by the Oil Well Improvement Co. This equipment is made for 3,000-pound test up to 9-inch o.d. and takes all sizes of oil savers and 10-inch lubricating chambers. It is fitted with two by-passes at the bottom although only one is shown in the cut. A. G. Heggem, president of this company is recognized as an authority on drilling practice and in 1914 while with the United States Bureau of Mines, wrote several technical papers on various subjects of this nature.

The Cameron Iron Works has had a great deal of experience in making equipment for handling big wells in the Gulf Coast areas of Texas and Louisiana and has also shipped its equipment into many other fields in this country and abroad and it has proven very satisfactory. The cut included in this article shows the general principles of the device and like all other manufacturers, this company has many different pieces of equipment designed for special duties.

### Kettleman Hills Cited

In California, the Kettleman Hills district is noted for its big wells and the high pressures of the producing sands and this is also true of several other fields out there so the problem of bringing in these wells in control is one that has been having the attention of numerous petroleum engineers and manufacturers so it is possible that as many different types of control equipment will be found in use there as anywhere in this country or abroad.

Among the leading manufacturers in these lines are Regan Forge & Engineering Co. and Shaffer Tool Works and types of their equipment are shown herewith. These cuts simply indicate one piece of apparatus but the companies make many different items of equipment for the varying conditions found at each well and in every district.

The Regan company makes several types of control heads and blowout preventers and this equipment is suited for use on either cable tools or rotary outfits. The company recommends that some form of equipment of this type be used on all wells as they are drilled so that they cannot get out of control by drilling unexpectedly into some high pressure zone and this equipment has been very generally used in many fields.

The Shaffer Tool Works also makes a complete line of blowout preventers, cellar control gates, high pressure fittings, etc., and its system of equipment is being used by a number of companies in the Santa Fe Springs district and in the Kettleman Hills. The system it recommends consists of two cellar control gates one fitted with steel rams to grip the drill pipe and prevent it being blown out of the hole and the other, or upper gate being fitted with steel blocks that will make complete shut off of the gas and oil once it is encountered after the tools have been withdrawn from the hole.

This description of equipment might be continued at some considerable length if all types of apparatus are to be included but space will not permit a complete listing of all apparatus but the general classes of equipment are covered by the above brief review.

### Many Articles on This Subject

There has been a great deal written about bringing wells under control and fighting fires when they have started and Miss Florence Lundell, librarian for the technical department of the Tulsa Public Library, has prepared a bibliography of numerous articles in that department

which is available to those interested if they will write for it.

Some of these articles have appeared in The Oil and Gas Journal and a partial list is given herewith:

Big oil fire extinguished with waste. Lockwood, C. D., The Oil and Gas Journal, July 10, 1924, page 36.

Blaze of gasser out after five days' fire. The Oil and Gas Journal, July 27, 1916, page 32.

Methods used to extinguish Salt Creek fire. The Oil and Gas Journal, December 28, 1922, page 16.

Novel methods used in fighting fires. L. P. Stockman, The Oil and Gas Journal, July 4, 1929, page 42.

Oil fire fighter—Texas. The Oil and Gas Journal, May 31, 1923, page 28.

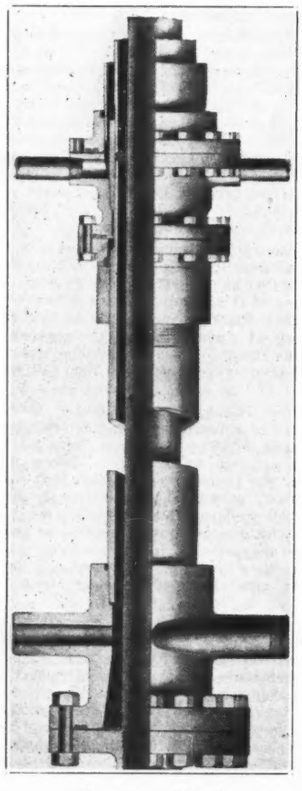
Elaborate tunneling operation first step in extinguishing well fire. The Oil and Gas Journal, August 22, 1929, page 113.

Gas blowouts in Little River Field. Mills, R. Van A., The Oil and Gas Journal, January 17, 1929, page 37.

Novel methods used to control notorious gas well at Monroe. Bell, H. W., The Oil and Gas Journal, March 13, 1924, page 88.

### Bureau of Mines Active

The United States Bureau of Mines has given a lot of time and thought to these problems and has on its staff men qualified to advise on methods for handling wells that are out of control or on fire. One of these publications is Bulletin 170 by C. P. Bowie, "Extinguishing and Preventing Oil and Gas Fires," in



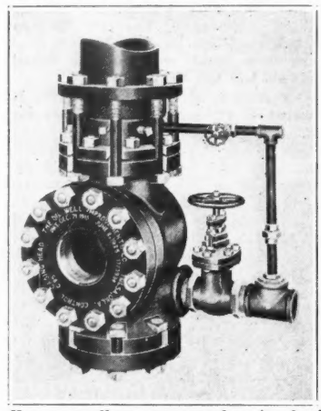
*Regan control head.*

which will be found a bibliography of literature on this and allied subjects up to and including the year 1919.

The geologists who have been making a study of the Oklahoma City Field are in agreement as to the underground conditions to the extent that it is now believed that this field is located in an area that at the producing horizon was once a limestone hill that was later buried under the sediment from later seas and then lifted above the surface of the waters and the top of the hill as well as the strata of younger formations along its flanks weathered and eroded.

This erosional action cut away part of the top of the hill and smoothed off the ends of the up-tilted formations that lay along its flanks and part of this weathered material was carried down the gently dipping west and southwest slopes of the hill and deposited in a bed of varying thickness over the ends of the Wilcox, Simpson, Viola and Hunton formations. This reworked and redeposited material forms the detrital zone.

Later all of this area was again sub-



*New type all-purpose control casing head made by Oil Well Improvement Co.*

merged under seas of later date and the Pennsylvanian formations laid down above the whole mass and there has been some faulting along the east side of the old Arbuckle limestone hill, at least in the Ordovician ages, and this has exposed one side of the limestone to formations that are the source rock for the oil. The oil has migrated from these source rocks into the limestones and it was this oil that was encountered and produced when the field was first drilled.

As drilling has progressed in ever widening circles around this old limestone hill the wells have been penetrating the up-tilted formations of older than Pennsylvanian age that lay in concentric rings around the flanks of this hill and at places, like the location of No. 1 Mary Sudik, the drill has actually entered into the upper end of one of these weathered and eroded strata and there the larger wells of the field have been found. As development progresses this theory is being proven because there is a zone of large wells whose locations on the surface corresponds to a projected section of the older formations below that lie around the sides of the Arbuckle limestone formation.

As the distance from the limestone core is increased to the north, west and south, and in the space between these three cardinal compass points, the wells are found to enter the older formations nearest the limestone hill and the younger strata as they progress outward.

A rough illustration might be given by taking half of a double onion with its many layers to represent this underground condition at the pay zone.

The heart of the onion which is at one side would represent the limestone hill with a fault on its east flank and if the top of the onion is sliced off with a knife the layers will be exposed and they would represent successively younger strata of sedimentary rocks from which oil and gas is being produced. Just how far out from the center limestone core these layers or strata will be productive of oil and gas is not known at this time but it now appears as though there are possibilities of encountering some of the younger Ordovician and Mississippian formations in these outer strata for only strata of the older periods of the Ordovician have so far been encountered in drilling.

This underground zone is now approximately 7 miles long on a northwest to southeast line and about 3 miles wide, and as mapped by geologists it may extend along its major axis for 10 or 11 miles which would carry its northernmost production area well within the boundaries of Oklahoma City but it hardly seems probable that drilling will be permitted there for the hazards of bringing in such deep wells are too great to be permitted in an area where people live and where there is so much valuable property.

If drilling should be permitted the safety regulations that should be enforced would make the wells cost so much that it does not seem possible that operators would undertake work upon small tracts such as would be available within the city limits, for the possible oil recovery would not justify the immense amount of damages that might be done if wells got out of control, or fires started. It is hoped that such attempts will not be made at this time when oil is so plentiful in other pools where hazards of this kind are not to be encountered.

## ENLARGES PIPE LINE SYSTEM

The Standard Oil Co. of Kansas is completing extensions to its pipe line system in Kansas which will enable the company to gather and deliver to its Neodesha, Kans., refinery, 15,000 bbls. of crude oil daily. The gathering system is in the Greenwood producing area of Kansas and long time contracts for crude oil supplies have been entered into with producers in that field. The company expects to purchase around 12,000 bbls. of crude oil daily at this time.

The Standard of Kansas started operating its own pipe line system in Kansas last year. Previously the company had purchased the bulk of its crude oil for refinery operation from one of the large producing and pipe line operators. The Neodesha refinery has a capacity of 20,000 bbls. daily.

## NEW MARKET FOR GASOLINE FRACTION

(Continued from Page 48)

pentanes would not readily gasify except at temperatures in excess of 100° F. The method of operation is not unlike that used in gas machines which often use pentane as a motor fuel.

### Sources of Supply

Since pentane is available from both natural gasoline manufacturers and refiners the supply is practically unlimited. However, those who have made a study of this feature of the development point out that in taking the pentane cut from either refinery gasoline or natural gasoline, a fraction desirable as motor fuel is removed. This is not true in the case of propane which as previously explained is largely a waste product so far as natural gasoline plant and refinery operations are concerned, operators generally endeavoring to produce a propane-free motor fuel or reduce the quantity to less than 0.5 per cent. Butanes are more desirable in motor fuel than propane but due to their volatility and vapor pressure there are limits as to the quantity than can be used and there are now excess supplies available for the liquefied gas field.

The quantity of pentane available in the ordinary grades of natural gasoline will vary from 20 to 30 per cent and the maximum found in the ordinary grades of refinery gasoline sold to car owners is usually around 10 to 12 per cent. It is especially desirable due to the fact that it contributes materially to the volatility of the motor fuel without excessive vapor pressure.

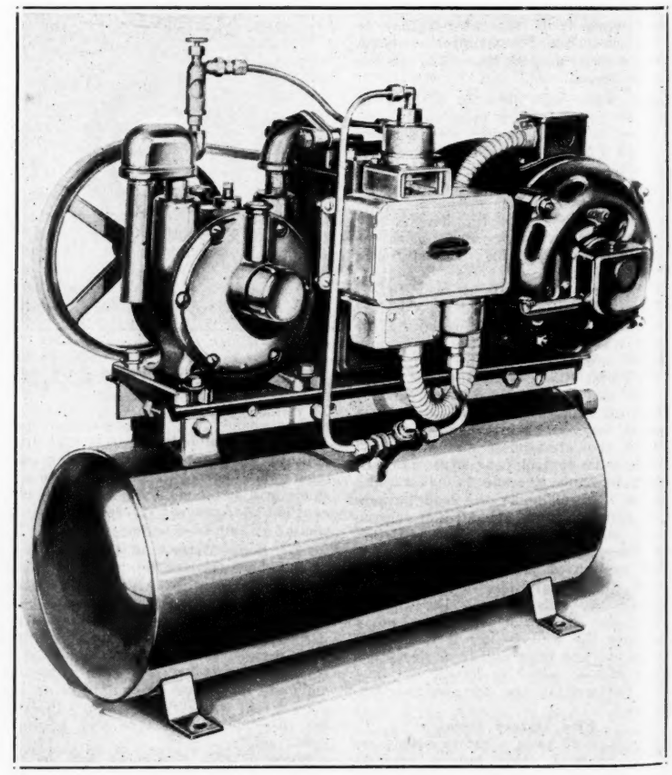
This is interpreted to mean that any large utilization of pentanes as liquefied fuels might mean that the sellers would have to secure a price which would offset the additional cost due to the fact that it is a desirable fraction of motor fuel. This danger could of course be minimized if commercially feasible by developing manufacturing methods to increase the yields of pentane. At present it is stated there are sufficient quantities of pentane available from natural gasoline plant operations so the problem regarding the future supply is not immediate.

### Cost of Gas

Regarding the cost to the consumer the official announcement of the Delco Light Co. states:

"Delcogas can be piped to any point up to 1,000 feet distant from the compressor, making gas service available in other buildings as well as in the home.

"City gas rates range from 50 cents per 1,000 cubic feet to as high as $3.20. Compared to the average cost of city artificial gas, Delcogas is no higher. The average cost of city artificial gas in the home is $4.50 a month. The average monthly cost of operating Delcogas in an average home is also $4.50. Tests show an average breakfast may be prepared with Delcogas at a fuel cost of 2 cents. An average dinner was prepared under test at a fuel cost of 6½ cents."



*Delcogas unit showing compressor and tank.*

# Storing Gas in Natural Reservoirs

## Storage in Partly Depleted Gas Sands and Repressuring Partly Depleted Oil Sands. Suggestions on Operations

By S. W. Meals
President, Carnegie Natural Gas Co.*

Storing gas in depleted oil and gas sands is not only a conservation measure but will prove a great help as an operating convenience to gas utilities by providing a means for meeting peak demands on the system, thus assuring consumers a uniform and full supply of fuel at all times. The aim of a well regulated utility, and in fact the pivot of its success, is competent and adequate service to its consumers. In order that a natural gas company may give its customers perfect service 365 days a year, it is compelled to maintain a supply of gas sufficient to meet the maximum peak hourly demand and must have it ready for instant use whenever the consumer opens the valve at the point of consumption. As the utility cannot regulate the weather, it must so regulate and operate its wells, compressing plants, transmission and distribution lines to meet weather conditions. If the temperatures drop 10°, 20° or 60°, a sufficient supply of gas must be at the valve for the customers or complaints will make business for the telephone company.

For a number of years several of the larger gas companies have been storing natural gas in partly depleted gas sands; several of the larger oil companies have been repressuring partly depleted oil sands to increase the production of oil. At the present time oil operators in the Bradford, Pa., Field are injecting hydraulic water pressure into the sands to increase the recovery of oil. The majority of these undertakings have proven not 100 per cent successful but in many cases the results have been over 500 per cent. In the latter cases, however, the success usually can be traced to a careful study of the property by competent engineers.

### Has Become Necessity

Natural gas has been classed as a fugitive commodity—difficult to secure, confine or handle; its possession is not certain as to quantity or duration. Even our courts have compared it to wild birds which fly away. Perhaps past history proves the indictment yet proper value of a commodity tends to the conservation of that commodity. Gas companies in the East have passed their day of wastefulness and are now practicing conservation in every department of their operations. That the industry may better serve its customers, expenditures of time and money are provided for investigation and research work. Operating officials are giving thought and study to the problem of using earth's "natural reservoirs" for the storage of gas, in order that the utility may have the surplus supply of fuel ready to meet the demand of its customers.

This is a day of long transmission lines—the point of consumption may be hundreds of miles from the source of production—so that storage of some kind becomes a necessity. Then, why not have the fuel bin where nature has provided? There are many of these porous domes, which at one time held high pressure gas in large volumes, that today are empty, still free from water and need only the openings cleaned to receive the repressuring fuel, whether that be "natural" or a clean and purified "manufactured" gas. If one company with only a few wells can store 200,000,000 or 300,000,000 feet and is able to withdraw 10,000,000, feet per day with only 50 pounds differential above line pressure, and another company stores about 8,000,000,000 feet with less than 80 pounds pressure on the storage—why should we hesitate to take advantage of convenient storage domes?

Since the subject was presented at the American Gas Association's meeting at Atlantic City in October of last year, a number of the oil and gas journals have published some very interesting articles on storage, repressuring and sand flooding, as well as studies made of sand cores—all of which are beneficial to the engineers considering the problem of storage. On the first page of the February 15 issue of the Saturday Evening Post there is an article by Garet Garrett, "Energy, Wild or Tame," which is well worth reading. Many requests have come in asking for information on the subject. One gentleman asked if gas could be stored in any rock formation. Natural gas operators know that gas, in commercial quantities, is obtained only from porous or reservoir rocks and such rocks, of whatever kind or origin, are commonly called "gas sands."

### Porosity of Sand

To produce or permit storage the sand must be open-grained or porous to allow passage of fluids between its particles so that if a hole is drilled into them, they can be drained of their liquid or gaseous content. The pore space in sands if formed of perfect spheres of equal diameters placed at a minimum distance apart is 25 per cent and at maximum distance 47 per cent. This porosity is constant irrespective of the size of the grain. If a cubic foot of sandstone, when saturated, will hold one-tenth of a cubic foot of oil or water, such sand is said to have a porosity of 10 per cent in as much as one-tenth of its volume is pore space or voids. One cubic foot of gas sand, having 10 per cent porosity at 150 pounds above vacuum or ten atmospheres at sea level, will hold 1 cubic foot of gas and in variations from this pressure the volume would follow Boyle's law. If we drill a 6-inch hole through 10 feet of pay sand with 10 per cent porosity, we uncover 226 square inches of pore space in the walls of such well, or about eight times the well area.

To estimate on the probable supply of gas from any given pool or area, the following factors would have to be known:

1. The area covered by the gas bearing rock.
2. The average thickness of the gas pay sand.
3. The average rock pressure.
4. The average pore space in the gas bearing rock.

### First Factor

The first factor may be defined by dry wells drilled or perhaps by carefully geologizing the territory; the second after wells have been drilled through the formation; the third can be had by averaging the direct pressure from various wells; the fourth (pore space) cannot be directly measured unless cores are taken, but by observing the rock pressure at two periods of time, sufficiently apart, and knowing the volume of gas produced, this factor can be closely approximated. Should there be water in the formation the rise of water in the same should be measured.

If in a given pool the average rock pressure last January was 300 pounds or 20 atmospheres and in January of this year 270 pounds or 18 atmospheres, we have used two atmospheric pressures or one-tenth of the total gas in a year. If 1,000,000,000 cubic feet were used or withdrawn in the year, we could safely estimate that 9,000,000,000 cubic feet is left in the sand. The volume of gas which may be produced from one acre depends on the rock pressure, the thickness of the pay sand and the porosity. Volumes of from 4,000,000 to 20,000,000 cubic feet per acre have been recorded.

If we wish to calculate the volume of gas which may be stored when conditions are as above mentioned, we simply reverse our equation; that is, if by withdrawing 1,000,000,000 cubic feet of gas the rock pressure is lowered two atmospheres, we can be reasonably sure that to increase the rock pressure two atmospheres it will require 1,000,000,000 cubic feet of gas and unless there is leakage or water encroachment we simply follow Boyle's law. For instance, I am informed in a Kentucky storage 218,000,000 feet withdrawn reduces the rock pressure 1 pound and this amount injected increases the rock pressure 1 pound. This is a perfectly tight storage which is an important factor in selecting your storage bin. Other factors to be considered in the selection of a storage field are:

Defining the area of the pool; thickness of the pay sand; original rock pressure; volume of gas which has been removed; present rock pressure, and porosity of the sand.

### Co-operation Needed

Utilities should co-operate with the State Geological department and the engineering departments of our schools and colleges in their studies and efforts to secure a correct correlation of producing sands. Core drilling of sands, in order to study the variations in porosity, thickness and lateral extent of the producing formations, will prove of much value to operators and will also aid the student in his research work. If a careful study was made of our gas sands and gas pools, the industry would be in better position to estimate gas reserves. After the famous Foster-Brendell well near McKeesport, Pa., was drilled in 1919 the state geologist under the supervision of J. French Robinson, made a very thorough study of the McKeesport Pool. He was able to define its area and made the estimate that 20,000,000,000 feet of gas might be expected from this area. The gas produced was all metered and when the rock pressure had been reduced to vacuum, 20,000,000,000 feet was withdrawn.

Many good gas and oil formations have been damaged and some of them actually ruined by improper plugging of wells. Fuel of inestimable value has been lost to future generations by man's carelessness yet nature has its own way of sealing these sore spots as it requires very little mud or cavings to close the sand pores. Before attempting to store gas in the sands, well openings into the sands should be carefully cleaned and cased to the top of the formations expected to be used as storage bins in order that no water, salt, tarry substances or cavings are forced into the sand pores to hinder the free flow of gas into the formation. Manufactured gas can be stored as readily as natural gas provided it is thoroughly cleaned of all tar and dust. Proper cleaning of manufactured gas is the problem hardest to solve; however, with up-to-date cooling installations, after the gas is compressed about 90 per cent of the dust and tar is removed and with the use of the Cottrell precipitators all trace of tar may be eliminated.

Closer co-operation between the oil and gas operators, landowners and the mining department of the states will be required in order that the gas industry may secure and use these wonderful natural storage basins. As a matter of conservation, the governing bodies of our states should see that proper legislation is enacted to regulate drilling and plugging of wells that these valuable reservoirs may be protected. Appropriations should be granted to our institutions for the purpose of furthering research and study of producing sands within the state.

### Concrete Observations

In closing I wish to give you one or two concrete observations made in years gone by which started me thinking about storing and repressuring oil and gas sands. Some 35 years ago the South Penn Oil Co. drilled a well south of Mannington, W. Va., which produced 60 bbls. of oil per day from the Gordon sand. Some time later a well was drilled on the Morgan farm about 2 miles southwest of the 60-bbl. oil well. The Morgan well was a big gas well in the Gordon sand and in attempting to shut in the well a string of pipe was dropped into the well. Almost a year passed before the well was finally closed in. During that time the production of the oil well had decreased until it was producing only 5 bbls. per day but when the Morgan well was closed in the production immediately increased until it reached its original production of 60 bbls. per day. The Morgan well, together with the gas wasted from the oil field, reduced the rock pressure in this formation (the Gordon sand) to 150 pounds over an area about 10 miles long by 1 mile wide. Wells found in sands above the Gordon had rock pressures as high as 700 pounds but if the drill reached the Gordon sand and the sand produced gas from this formation, only 150 pounds rock pressure was found.

Another observation of interest is the big Speigle well near McKeesport drilled in 1914. The gas was found in the Hundred-Foot sand and it is claimed the well produced 70,000,000 feet of gas. In time the gas was depleted and vacuum pumps were installed. The field was pumped to 24 vacuums and finally was abandoned. In 1920 during the last McKeesport gas boom some stock selling promoters leased the 8-acre tract from Mr. Speigle and stocked out a well which was drilled 100 feet from the abandoned well. How much gas do you think was found when the Hundred-Foot sand was tapped and what rock pressure? A surprise for all of us old-timers for there was close to 2,000,000 feet of gas and 32½ pounds rock pressure. The well is still producing.

*Before eastern district, A.P.I. Division of Production, Pittsburgh, Pa., April, 1930.

## PURCHASING AGENTS ELECT

The Tulsa Purchasing Agents Association elected the following officers at the annual meeting held Tuesday evening, April 8: President, W. R. Brown, Transcontinental Oil Co.; vice president, H. B. Ward, H. F. Wilcox Oil & Gas Co.; second vice president, G. H. Fagaines, Gypsy Oil Co.; national director, H. D. Partridge, Indian Territory Illuminating Oil Co.; alternate national director, C. A. Prichard, Mid-Continent Petroleum Corp.; secretary-treasurer, Harold M. Cosgrove; assistant secretary-treasurer, E. R. Welch.

## WILL DRILL IN SAN DOMINGO

FORT WORTH, Tex., Apr. 7.—A responsible eastern group is about to test with a deep well properties in the Dominican Republic where he recently completed an examination, J. Whitney Lewis, consulting geologist, of Fort Worth, says. Mr. Lewis was in Havana last summer. He was associated with G. Jeffreys, consulting geologist of New York, in his recent work in the Dominican Republic in Azua Province, Island of Haiti.

# DRY HOLE IN ANDERSON COUNTY; LA RUE STRUCTURE TO GET PLAY

By L. E. Bredberg
*Fort Worth Bureau, The Oil and Gas Journal*

FORT WORTH, Tex., Apr. 7.—Anderson County, in the East Central Texas district, chalked up another wildcat disappointment this week when Humble Oil & Refining Co.'s No. 1 Stephenson in the M. Roberts Survey was marked as a dry hole at the total depth of 3,742 feet. Last week Magnolia Petroleum Co.'s No. 2 Williams was abandoned at a total depth of 4,685 feet. Roeser and others' No. 1 Moody in the James Welch, probably the most interesting wildcat in Anderson County for the past two months is still drilling ahead slowly. It topped the Woodbine sand at 4,745 feet which was dry. The last report gave it below 4,950 feet.

Shell Petroleum Corp.'s No. 1 Stephens on the company's La Rue structure and block in the eastern part of Henderson County topped the Pecan Gap chalk at 2,050 feet with an elevation of 514 feet, consequently is looking quite favorable geologically. This test is near the town of La Rue, around which there was a "hot play" some few weeks ago when Shell was core drilling its acreage on the structure. Another week's drilling on the test will give further interesting information which may point to even more favorable signs for production in the test. It is drilling below 2,130 feet.

The Shell Petroleum Corp.'s No. 1 S. M. Fowler, on the John Walling Survey, Van Zandt County, got the top of the sand at 2,498 feet and drilled to 2,887 feet. The well made 1,500 bbls. the first 24 hours through a half-inch choke. The Pure Oil Co.'s No. 1 Howell in the Van area made 957 bbls. through a half-inch choke from sand topped at 2,609 feet, total depth of the well 2,885 feet.

Van Zandt County reports locations for four more wildcats this week, and Rains County one location. Although no information is obtainable on the Van Pool, there are yet no dry holes to darken the outlook of the field, and several wells are being completed each week, adding an unknown quantity to the potential, and the daily amount of production. At present there are 20 wells producing in the field, making an estimated daily average production of around 20,000 bbls., all of the wells pinched, most of them flowing through one-half-inch chokes, and more storage is now being erected on Pure Oil Co.'s tank farm west of the discovery well to help accommodate the new producers as they are completed. Two 55,000-bbl. tanks are going up and more are to follow.

Work is progressing rapidly on the Pure Oil Co.'s 10-inch line from the Van Pool to the coast, with crews working on both ends of the line and each welding about 1½ miles of pipe per day, but as drilling is going ahead in the pool on many tests, and possibly more locations for other tests being made almost each week, the present storage and short line to Chandler where crude is loaded out by way of tank car, cannot possibly handle the present producers, regardless of their being pinched in to but a small amount of their daily potential, and it appears that either the wells will have to be shut in after they are completed, or all drilling stopped until the outlet to the coast is completed.

Penn and others' No. 1 Burgher in the Cesaria Charman Survey, Freestone County, is drilling at 3,020 feet in sand. It topped the Pecan Gap chalk at 2,971 feet and the Midway at 1,170 feet, and the Taylor at 2,185 feet. This test is southeast of Fairfield. It is the most interesting test of the county at present.

Daily average production for week ending April 5:

**EAST CENTRAL TEXAS**

| Pool— | Bbls. |
|---|---|
| Boggy Creek | 3,600 |
| Cedar Creek | 55 |
| Currie | 392 |
| Hill County | 45 |
| Mexia | 4,183 |
| Minerva | 470 |
| Nigger Creek | 205 |
| Powell | 5,854 |
| Richland | 210 |
| Thrall | 31 |
| Van | 12,959 |
| Wortham | 870 |
| Total East Central Texas | 28,874 |
| Last week | 26,280 |
| Increase | 2,594 |

## EAST CENTRAL TEXAS WILDCATS

**Week ending April 8**

**ANDERSON COUNTY**

Humble Oil & Ref. Co.'s No. 1 W. Johnson, 158½-acre tract in James Hall Sur., 995 ft. W of E and 100 ft. N of S L. of farm and Sur. ..... Top Pecan Gap chalk 2,908 ft.; out of Pecan Gap chalk at 3,025 ft.; top Austin chalk 3,200 ft.; drlg. 3,454 ft.; top Woodbine 3,374 ft.; tested dry.

R. H. Keen's No. 1 Murdock, 800 ft. S and 175 ft. E of NW cor. Broomfield Sur. ..... S. D. 100 ft.

Roeser et al's No. 1 W. L. Moody, 200 ft. out of SW cor. E 100-acre tract Jas. Welch Sur. ..... Drlg. 4,950 ft.

Sun Oil Co.'s No. 1 Bowers & Maier, 1,000 ft. NE of SW and 1,450 ft. NW of SE lines of 548-acre tract in E. G. Mayers Sur., 6 miles southwest of Palestine. .. Crooked hole 997 ft.

**HENDERSON COUNTY**

H. B. Ashburn et al's No. 1 T. E. Barry, center of Barry's 59-acre tract in A. York Sur. ..... S. D. 1,000 ft.

Chapman's No. 1 Cade, 1,662 ft. from N and 3,294 ft. from W of J. B. Dorsey Sur. ..... Drlg. 2,165 ft.

Cranfill-Reynolds & Louisiana's No. 1 A. J. Broome, 1,350 ft. S of N and 150 ft. E of W lines of easterly Broome Farm in Samuel Chears Sur. ..... Drlg. 3,890 ft.; top Pecan Gap 2,695 ft.; base 2,890 ft.

Shell's No. 1 Stephens, 760 ft. from S, 830 ft. from E lines I. D. Owens Sur., S. T. Stephens 118-ac. tract ..... Top Pecan Gap chalk 2,050 ft.; elevation 514 ft.

**RAINS COUNTY**

Owens & Sloan's No. 1 Hill, 150 ft. out of NW cor. of 150-ac. tract, T. McMahon Sur. ..... Rigging up.

**SMITH COUNTY**

Deep Rock Oil Co.'s No. 1 Bowdoin, located in Martin Lout Sur. ..... Drlg. 4,220 ft.

Adair & Daniels' No. 1 Panier, 200 ft. S of S line of Wm. H. Malone Sur. and C of W half of S line of survey in David Wilson Sur. ..... Location.

East Texas Oil Corp.'s No. 1 People National Bank, 150 ft. S and E of NW cor. their 259-acre tract John McFadden Sur. ..... Drlg. 3,504 ft.; top of Austin chalk 3,008 ft.; bottom Austin 3,195 ft.

Owen Sloan Oil Co.'s No. 1 Starnes, 846 ft. along W lines of John Waller Sur. from NE cor. of J. O. Dillard Sur. and 80 ft. E at right angles to W line of J. Waller Sur. ..... S. D. 1,322 ft.

Sutton et al's No. 1 W. D. Hammond, 150 ft. out of SW cor. W. D. Hammond tract in Jas. Reed Sur. ..... Drlg. 1,558 ft.

**VAN ZANDT COUNTY**

Central Oil Co.'s No. 1 R. H. Peters, 600 ft. from N and 19 ft. from W lines of 40-ft. strip along W line of Peters 70-acre tract in Nacogdoches Sur. ..... Derrick.

Central Oil Co.'s No. 1 West, 1,930 ft. W of E and 600 ft. N of S lines of J. West 500-acre farm in A. C. Walters Sur. ..... Top Austin chalk 3,900 ft.; drlg. 4,340 ft.

Cranfill & Reynolds' No. 1 Alexander, 150 ft. from S and W of 42-ac. tract, J. Burleson Sur., 1 mile S of Grand Saline ..... Location.

Cranfill & Reynolds Co.'s No. 1 C. S. Coker, 160 ft. each way from SW cor. of Cokers 85.5-acre tract in Wm. Daniel Sur, 9,000 ft. NE of Pure's No. 1 Magers. .. Drlg. 860 ft.

Cranfill & Reynolds' No. 1 Clark, 160 ft. from W and 52½ ft. from N of strip 101½ by 1,100 ft. off N end Clark's 24-ac. tract, J. Walling Sur., SE of discovery ..... Derrick.

T. Daniels' No. 1 Fannie Cumbine, 185 ft. S and 175 ft. E of NW cor. 156-acre tract John Wright Sur. ..... Derrick.

Dennis Oil Co.'s No. 1 C. W. Morris, 100 ft. from N and 300 ft. from E lines of Morris 160-acre tract in C. L. Morris Sur., 5 miles SE of Ben Wheeler. ..... Drlg. 2,587 ft.

Hart Pet. Co.'s No. 1 L. L. Swain, 102 ft. S of N and 209 ft. E of W lines of 62-acre tract in SE cor. Swain 43.8-acre tract, 7,000 ft. E and 1,500 ft. N of discovery. ..... Location.

Hartt Oil Co.'s No. 1 Dr. L. M. Cox in A. C. Night Sur. 1,785 ft. N of S line and 524 ft. E of W line ..... Derrick.

Howard & Dooley's No. 1 Elliott 188-ac. tract in W. H. Bundy Sur. ..... Derrick.

Imperator Oil Co.'s No. 1 Canter, 150 ft. from N and W of Carter 171-ac. tract, W. M. Daniels Sur., NE of Van Pool ..... Location.

Pandem Oil Co.'s No. 1 Brinn & Gibbard in Ramon Sunigas Sur., NE of Grand Saline ..... Drlg. 1,900 ft.

W. B. Powell's No. 1 Bailey, 905 ft. N of S and 150 ft. W of E lines of 51-acre tract in Nacogdoches School Land ..... Top Pecan Gap 2,591 ft.; drlg. 3,050 ft.

Short et al's No. 1 B. C. Andrews, 330 ft. N and 160 ft. E of NE cor. of J. P. Farley 60-acre tract in Margaret Neil Sur. ..... S. D. 100 ft.

Texas Chief Oil Co.'s No. 1 Foster, 600 ft. E of W line and 600 ft. N of S line of W. P. Foster's 151-acre tract in F. Montgomery Sur., 7 miles south of Canton. ..... Spudded and shut down.

Pure-Humble's No. 1 L. V. Freeman, 250 ft. from E and 712 ft. from N line of 31.5-accre tract in John Walling Sur., one-half mile E of discovery. ..... Drlg. 2,350 ft.

Pure Oil Co.'s No. 1 Tunnell, 250 ft. S of N line, 200 ft. E of W line of Tunnell's 97.8-acre tract John Walling Sur., E of Shell's No. 1 Fowler. ..... Coring 2,878 ft.

Pure Oil Co.'s No. 2 Thompson, 525 ft. S of N line and 270 ft. E of W line of J. T. Thompson 49.4-acre tract Mund Gross Sur. E offset to Pure No. 1 Wells. .. S. D. 2,548 ft.; waiting on drill pipe.

Shell Pet. Corp.'s No. 2 Fowler, Lease 302, 250 ft. N of S and 200 ft. E of W lines of Fowler 35.35-ac. tract ..... Derrick.

The Texas Company's No. 1 White, 665 ft. N of S line and 250 ft. E of W line of White 33.7-acre tract Nacogdoches C. S. line E of Pure No. 1 Magers .... T. D. 2,990 ft.; to set liner.

Van Zandt Oil & Dev. Co.'s No. 1 Robinson, located NE cor. of Y'Barbo Sur., 4 miles E of Grand Saline. .... Top Pecan Gap chalk 2,764 ft.; fishing 2,904 ft.

Shell Pet. Corp.'s No. 1 Fowler, located 268 ft. S of N line and 122 ft. E of W line of B. M. Fowler 3-acre tract. ..... S. D. 2,505 ft.;Top Pecan Gap chalk 2,233 ft.

Pure Oil Co.'s No. 1 Wells, 105 ft. W of E line and 120 ft. N of S line of R. L. Wells 99-acre tract .... Drlg. 1,925 ft.

Pure Oil Co.'s and Hill & Hill's No. 1 Peters, 754 ft. N of S line and 200 ft. W of E line of R. H. Peters 70.6-acre tract. ..... Drlg. 1,635 ft.

Pure Oil Co.'s No. 1 Ellison, 736 ft. E of W line 200 ft. S of N line of Ellison 67-acre tract ..... Drlg. 1,423 ft.; cored with no oil shows.

Pure Oil Co.'s No. 1 Clark-Houston, 120 ft. from N and W of No. 1 Wells ..... Location.

Pure Oil Co.'s No. 1 Ellison, 736 ft. E of W line, 200 ft. S of N line Ellison 67-ac. tract ..... Drlg. 1,423 ft.; no oil show.

Upchurch et al's No. 1 Owlet, 4 miles SW of pool, Green School House ..... Spudding.

Pure Oil Co.'s No. 3 Jarman, 657 ft. from S and 250 ft. from W of 134-ac. tract ..... Location.

Pure Oil Co.'s No. 4 Jarman, 825 ft. from E and 560 ft. from S of Jarman 134-ac. tract ..... Location.

Pure Oil Co.'s No. 1 Leanard, 777 ft. from S and 200 ft. from W of 47.5-ac. tract ..... Location.

Pure Oil Co.'s No. 3 Thompson, 270 ft. from N and 122 ft. from E of 50.75-ac. tract offsetting No. 1 Fowler ..... Location.

Pure Oil Co.'s No. 1 Tunnell, 120 ft. from S, 1,109 ft. from W of 4.23-ac. tract, M. Gross Sur. ..... Location.

Pure Oil Co.'s No. 2 Tunnell, 575 ft. from S and 105 ft. from E of 4.23-ac. tract ..... Location.

Pure Oil Co.'s No. 2 Wells, 250 ft. out of most easterly NE cor. 41.5-ac. tract ..... Location.

**WOOD COUNTY**

Big Indian Oil Co.'s No. 1 R. J. King, 450 ft. W of E line and 150 ft. N of S line of King's 109-acre tract in Wm. Barnhill Sur. ..... S. D. 2,270 ft.

Pace et al's No. 1 Dickey, 1,200 ft. from E and 300 ft. from S of Dickey 120-ac. tract, J. O. Clark Sur. .... Location.

West Texas Royalty Co.'s No. 1 Negro Orphanage, 250 ft. N and W of SE cor. of 100-acre tract in C. E. Rivers Sur., 1 mile south of Mineola. ..... S. O. 1,847 ft., in Navarro; top Pecan Gap 3,043 ft.; S. D. 3,132 ft.

Gulf Prod. Co.'s No. 1 N. F. Carver, 300 ft. out of NE cor. of N. F. Carver 60-acre tract in William Kerns Sur. ..... Drlg. 5,005 ft.

## HOBBS POOL IS NOW ASSURED TRANSPORTATION

(Continued from Page 48)

except caterpillar tractors, and such tractors will be used in stringing the pipe.

Cactus, mesquite grass and mesquite trees will be the only herbage found along the right of way of these lines, and the pipe liner's only live neighbors to be found along the lines will be a few scattered herds of cattle, prairie dogs, chaparrals (road runners) and rattlesnakes, the latter making the pipe liner keep a sharp lookout, and a quick ear. A picture of 13 is shown to prove that West Texas still has its rattlesnakes, and that the pipe line men have them as a constant source of worry. The men in the picture are Earnest Barrow on the right, and F. D. Morris on the left, both with the Atlantic Pipe Line Co. stationed at two of its stations near Odessa. The rattlers were killed near the company's Midway station, near the former place. Discovering and dispatching of these 13 "diamond-backs" was a matter of only 20 minutes' work. Mr. Howe, superintendent of the Atlantic Pipe Line Co., Dallas, Tex., has a skin of one of the rattlers killed near an Atlantic line which is about 12 inches wide and 5 feet long and has 14 rattles, several others having been broken off.

The Texas Pacific Coal & Oil Co. which has production in Lea County, New Mexico, has also started the survey

of a line from the Winkler County Pool to the Henry Pool, in Lea County, and may perhaps build such a line if contracts can be made with some other company to take its production and runs at the Winkler County terminus. The company now has one gasser and two oil wells producing better than 1,000 bbls. per day, and has another well drilling on its acreage, and as it can dispose of but a small amount of its present production to the Texas Pipe Line Co., there is need of another outlet unless a deal is made with the Humble Pipe Line Co. to run its full production. The company is also starting the construction of a gasoline plant near its producers and will operate the plant on the gas coming from the two oil producers This plant will later be enlarged to cope with the mounting production of gas and oil. No set capacity has been announced.

**Shell Line Reports**

Many rumors have stated that the Eggleston Pipe Line Co. would build or operate a line for the Shell Petroleum Corp. from Winkler County to the Hobbs area, but these have been mere rumors, unfounded according to men with the Shell Petroleum Corp., but as the latter company has one producer in the Hobbs Field at present and other tests contemplated for its acreage, it may decide to extend its own line from the Hendricks Pool in Winkler County to the Hobbs Field to accommodate its own production and offset producers. This is merely a conjecture at present, but nevertheless a probability. Shell Pipe Line Co. has two 6-inch lines running from Winkler County to McCamey where it has a large tank farm, and from there a trunk line runs to Healdton, Okla., and another runs to the Gulf Coast at Houston and a line into the Hobbs area to gather production from that field would help insure a supply for these two main trunk lines, as well as give Shell an outlet for its wells in the field.

Humble Pipe Line Co.'s trunk lines out of the West Texas have been running on West Texas crude, and the Penn Pool, in Ector County, is another source of supply for the Humble lines, as a connecting link has been built from this pool to Humble's carrier which runs through Crane County from Winkler to McCamey, thence south to the coast. The Humble Oil & Refining Co. has production in the Penn Pool, and also many acres which are potential suppliers of crude to help fill the line from the Penn Pool, and no doubt contracts will be made with other producing companies and operators in the field for their production, or part of it. It now appears as if the Penn Pool and the Hobbs Field would be the two main producing areas in West Texas and southeast New Mexico during the year, and for an indefinite period, for the Penn Pool is still undefined in many directions and many are of opinion it will be a pool similar to the Hendricks Pool. One dry hole has defined it to the southeast, but in other directions it is still undefined. Two tests, 2 miles northwest of production, will be closely watched to see if they will extend the pool in that direction, and as they are both running much higher on top of the salt than the nearest producer it now looks as if they would be practically sure of making producers. If they are producers, it will make the pool at least 4 miles long and about 2 miles wide. Later tests will be drilled to the west and east of the present producing and drilling wells to prove just how much territory the field will cover from east to west.

**Skelly Purchase**

The Skelly Oil Co., which has production in Crane, Pecos, Reagan and Winkler Counties, Texas, has just closed a fair-sized deal for acreage near the Penn Pool in Ector County, practically assuring itself of a good amount of production in that new area, possibly the best production it has yet had in the Permian Basin, promising a potential supply of crude for the Burford refinery at Pecos, Tex. Burford has a 4-inch line to the Penn Pool now running oil via Winkler County to its Pecos refinery, and with the present owned Skelly leases in the Penn Pool and the new potential producing acreage just purchased Skelly may be one of the major producers in West Texas.

Pipe lines have followed practically every pool yet discovered in the Permian Basin, several lines running to each pool furnishing plenty of outlets, and with the new lines proposed and ready for laying into southeast New Mexico if oil is found in commercial quantities pipe lines will come to take the production.

## ABSORPTION OIL ADDS TO PLANT EFFICIENCY

(Continued from Page 163)

mer being preferable because of its simplicity and the safety factor involved.

**Advantages**

The distillation and purification of absorption oil direct from natural gasoline plants is a relatively new feature as far as California operations are concerned as the first installation was made less than six months ago. The advantages accruing from the use of purifiers are quite obvious especially since it increases plant efficiency and reduces the manufacturing cost. The Gilmore Oil Co. has installed purifying units in all four of its natural gasoline plants at Long Beach and this equipment has proved entirely satisfactory after several months of continuous operation. The first unit was installed about five months ago as an experiment but it proved so successful that preparations were immediately undertaken to make these units standardized equipment on all Gilmore plants. The company has recently completed work on the fourth installation and this is now in operation.

The new purifying systems being used by the Gilmore Oil Co. are entirely automatic and do not require any attention except at infrequent intervals when it is necessary to dump out some of the undesirable black oil. This fluid comes direct from the system and is automatically fed to the evaporator where the light desirables are vaporized off and subsequently returned to the system after being condensed. The water vapors which also come off with the lighter fractions of the absorption oil are separated from the latter in a dewatering tank. The dirty oil from the evaporator is conveyed through a fire still and returned again to the top of the evaporator. This is a continuous process until all the undesirable elements are left in the bottom of the unit. The evaporator is a vertical cylinder approximately 15 feet in height and 3 feet in diameter, while the dewatering tank is 10 feet high and 2 feet in diameter.

The absorption oil after undergoing treatment is changed from the usual black oil to a clear transparent amber color. By removing all the heavy undesirables, no dead oil remains in the system, thus eliminating the necessity of cleaning out the plates of the absorber and heat exchanger. There is also less loss of oil through drainage from the absorbers. One of the most important features in connection with these purifiers is that they eliminate the necessity of frequently changing oil. It has been the practice of the Gilmore Oil Co. in the past to shut down its plants about every 8 or 10 months in order to replace the absorption oil and clean out the equipment. With the new equipment, this is no longer necessary as the process is continuous and the automatic control permits a high rate of circulation to be maintained in the system.

Each of the Gilmore Oil Co.'s four natural gasoline plants at Long Beach has a capacity of approximately 12,000 gallons of absorption oil. Previous to installing the new purifiers, circulation was maintained at about 30,000 gallons daily but these plants are now operating on a daily circulation of 40,000 gallons. The new equipment treats around 3,000 gallons per day but this has run as high as 5,400 gallons daily. In place of the old familiar black absorption oil, the glass gauges now show either a pure white fluid or an amber colored oil.

## ADVANCE IN GASOLINE CONTINUES, DEMAND SLOW

(Continued from Page 44)

bbls. greater than on the same date in 1929.

This statistical summary reflects the conservative operations of Mid-Continent refiners and indicates that they are in a position to take advantage of any improvement in the general gasoline situation. The latter is largely dependent on developments among the coastal refiners including California, but reports from those areas recently have been encouraging.

**Gasoline and Naphtha**

Few weak spots in the gasoline market are reported either in Oklahoma or adjoining Mid-Continent areas. Cases are reported from day to day in which individual refiners are lagging in the price advances, but these companies usually increase their volume of business so that they advance prices quickly.

Last week U. S. Motor gasoline was available in North Texas under the Oklahoma prices. But on Monday and Tuesday the North Texas market had stiffened until it was at least as high as the Oklahoma market for northern shipment.

Although most of the trade interest centers in the U. S. Motor grade the higher gravity gasolines have also moved up fractionally. The 60-62 400 endpoint is scarce at a price range of 6¾ to 7 cents. The 390 grade is a quarter cent higher and 375 is selling over a price range of 7¼ to 7¾ cents. The bulk of the 390 and 375 grades are moving to the Gulf Coast on export contracts.

Refiners report a routine naphtha demand at a price range of 6½ to 6¾ cents.

**Natural Gasolines**

Most of the natural gasoline grades are one-eighth cent higher than they were a week ago. Grades A and AA were selling at 5¾ cents and the remaining grades were generally quoted at a flat price of 5 cents. The Grade BB was scarce at that price and it is believed that it will move up to within one-half cent of the Grade AA price. Two of the major manufacturers in Oklahoma were among the buyers during the past week.

**Distillate and Gas Oil**

Although the general price range on distillate and gas oil has shown little change, an occasional spot sale with a substantial price concession is reported. Many refiners in the Mid-Continent are no longer offering either product on the spot market. Some are storing to secure an adequate supply of charging stock for cracking units during the summer months while others expect an improved spot market later in the year.

The price range on gas oils is generally 2½ to 2¾ cents with some material sold both below and above this range. Distillates are selling from 3 cents up.

**Fuel Oil**

The higher gravity fuel oils are unchanged. The demand for these grades in Oklahoma is slow but the supply is also limited so that prices are being maintained. Prices on specification material of the lower gravities ranged down to 60 cents with sales of other grades as low as 50 cents.

**Lubricants**

Refiners who advanced neutral prices last week are firm in their quotations. Despite the increasing quantity of lower priced bright stock available both in the Coastal areas and the Middle West, Oklahoma refiners have not lowered their prices on bright stocks. The principal grade—150-160 D—continues to be quoted at 37 cents.

## MID-CONTINENT REFINERY OPERATIONS

(Data given in thousands of barrels)

| | Crude run to stills | | | Gasoline prod. | | | Gasoline stocks† | | |
|---|---|---|---|---|---|---|---|---|---|
| | Feb., 1930 | Jan., 1930 | Feb., 1929 | Feb., 1930 | Jan., 1930 | Feb., 1929 | Feb., 1930 | Jan., 1930 | Feb., 1929 |
| Okla., Kans., etc. .. | 8,323 | 9,270 | 8,101 | 4,563 | 4,866 | 4,533 | 5,248 | 4,947 | 5,743 |
| Texas* ..... | 4,802 | 4,873 | 4,218 | 2,003 | 2,019 | 1,567 | 1,545 | 1,452 | 960 |
| Louisiana-Ark.* .... | 1,764 | 2,019 | 1,874 | 654 | 653 | 523 | 311 | 329 | 300 |
| Total ..... | 14,889 | 16,162 | 14,193 | 7,220 | 7,538 | 6,623 | 7,104 | 6,728 | 7,003 |

*Except Gulf Coast. †End of month. Data based on Bureau of Mines reports.

## Late Fields

(Continued from Page 56)

er, SW cor. SE, Section 8-14-4, Lincoln County, flowed 284 bbls. the first hour and 250 bbls. the second hour from a sand at 4,612-75 feet. The well was then pinched and was producing with a 250-pound back pressure. The well was flowing wild for several hours before it was brought under control.

Continental Oil Co. and Barnsdall Oil Corp.'s No. 1 Brown, N half N half SW, Section 10-20-4w, Garfield County, a wildcat test about 6 miles north of the Marshall Pool, in Logan County, found the Simpson sand at 5,730 feet, and oil at 5,806-20 feet, where it filled up 2,500 feet.

Dixie Oil Co.'s No. 1 Norman, SE cor. NE NW, Section 17-6-6, Seminole County, was the latest well completed in the Konawa Pool. The well made 180 bbls. the first 24 hours from sand at 2,911-14 feet, total depth of 2,925 feet.

Production from the Oklahoma City Pool on the gauge ending at 7 a.m., Tuesday, April 8, was 125,066 bbls. from 35 wells.

Tom Slick Oil Co. and Anderson & Prichard Oil Corp.'s No. 4 Hoopes, NE cor. SW NE, Section 31-11-2w, Oklahoma City Pool, was opened one hour and made 572 bbls. of oil and what is estimated 150,000,000 feet of gas from the Simpson sand at a total depth of 6,571 feet.

Indian Territory Illuminating Oil Co.'s No. 1 Precure, SE cor., Section 11-11-3w, in the northwest part of the Oklahoma City Pool, was still blowing wild on April 8. The test was estimated to be making 75,000,000 feet of gas from a total depth of 6,010 feet, with the drill pipe still in the hole.

Another new well in the Oklahoma City Pool was Indian Territory Illuminating Oil Co.'s No. 1 M. Warden, NW cor., Section 24-11-3w, on the west side. It made 136 bbls. in 12 hours from a total depth of 6,575 feet. Standard tools will be rigged up and the test drilled deeper.

New locations were made on the south side of the Oklahoma City Pool, over the line in Cleveland County, by the Continental Oil Co. for No. 1 Sudik, NW cor. NE, and for No. 2, NE cor. NW NE, both in Section 6-10-2w. Indian Territory Illuminating Oil Co. has also announced a new location for No. 1 Reynolds, NE cor. NW, Section 6-10-2w.

### COSDEN BUSINESS GROWING

The Cosden Oil Co. is selling 30,000,000 gallons of gasoline annually through its stations and expects to increase this distribution in the current year, according to J. S. Cosden, president, in the report for 1929. "Our refinery, which was to have been completed the early part of last year, owing to delays by the contractors was not put into full operation until the latter part of the year, and is now fully completed," says Mr. Cosden. "Our gasoline output for 1930 will be considerably in excess of the output for 1929, without addition of new equipment. We have devoted considerable time and money to the acquisition and marketing facilities for distribution of refined products. We have a total of 201 service stations, and are distributing through these stations approximately 30,000,000 gallons yearly, and expect to increase this amount during the year."

## MID-CONTINENT SECTION PRODUCTION DIVISION

The spring meeting of the Mid-Continent section, American Petroleum Institute, Division of Production, will be held in the Crystal ballroom, Mayo Hotel, Tulsa, on May 23-24.

The program committee consists of W. K. Whiteford, Barnsdall Oil Co.; R. W. Bond, Shell Petroleum Corp.; E. H. Griswold, Continental Oil Co.; K. A. Covell, Indian Territory Illuminating Oil Co.; R. R. Hawkins, The Texas Company, and R. M. Carr, Sinclair Oil & Gas Co. This committee has requested the following to supply as much information on their particular subject or subjects as possible and when those contributions are received, one of each group will be asked to rewrite the contributions into one paper with the names of all contributors as co-authors:

Weighing Wells: E. A. Carr, Pure Oil Co.; R. M. Carr, Sinclair Oil & Gas Co.; H. D. Collins, Gypsy Oil Co.; F. B. Hall, Tidal Oil Co.; R. R. Hawkins, The Texas Company; F. W. Robinson, Carter Oil Co., and C. V. Sidwell, Amerada Petroleum Corp.

Mud Fluids: H. F. Beardmore, Indian Territory Illuminating Oil Co.; R. W. Bond, Shell Petroleum Corp.; R. S. Cartwright, Prunty Drilling Co.; Arch Haynes, Haynes Drilling Co., and T. H. Rakestraw, Gypsy Oil Co.

Some Recent Development in Deep Well Pumping Methods: R. W. Bond, Shell Petroleum Corp.; C. C. Carlyle, Prairie Oil & Gas Co.; E. H. Griswold, Continental Oil Co.; Ed Guidinger, Phillips Petroleum Corp.; R. R. Hawkins, The Texas Company; L. S. Thompson, Carter Oil Co., and D. L. Trax, Gypsy Oil Co.

Oil Treating Methods: P. L. Guarin, Shell Petroleum Corp.; R. R. Hawkins, The Texas Company; R. R. MacDonald, Shaffer Oil Co.; J. R. McWilliams, Skelly Oil Co.; C. V. Millikan, Amerada Petroleum Corp.; L. A. Ogden, Empire Cos.; Charles Prather, Gypsy Oil Co.; F. W. Robinson, Carter Oil Co., and R. W. Spencer, Barnsdall Oil Co.

Good Practice on Lease and Well Connections: R. W. Bond, Shell Petroleum Corp.; R. M. Carr, Sinclair Oil & Gas Co.; C. M. Copeland, Comar Oil Co.; K. A. Covell, Indian Territory Illuminating Oil Co.; R. E. Kollar, Carter Oil Co.; J. R. McWilliams, Skelly Oil Co.; F. W. Shelton, Reiter-Foster Co.; L. A. Summers, Barnsdall Oil Co.

There will also be an election of officers for the Mid-Continent district for 1930 at this meeting.

## PRAIRIE SHIPMENTS IN MARCH

The Prairie Pipe Line Co.'s shipments of crude oil in March were 6,114,572.43 bbls., a daily average of 197,244 bbls. per day. The February shipments averaged 194,041 bbls. and the January shipments 201,859 bbls.

## THE TEXAS COMPANY MOVES

The Texas Company announces the removal of its New York offices to 135 East Forty-second Street, New York City, effective April 7. The offices formerly were located at 17 Battery Place. Telephone Murray Hill 7701.

## OREGON BASIN CRUDE PRICE

WASHINGTON, D. C., Apr. 8.—The District of Columbia Court of Appeals upholds the right of the Secretary of the Interior to fix the price at which oil taken from government owned lands under leases may be sold and was within his right when he refused to approve a contract made by the Cody Petroleum Co. to sell oil from the Oregon Basin in Wyoming to The Texas Company at 53 cents a barrel at the well and must insist on a price of 85 cents. This action reversed the District Supreme Court, which had granted The Texas Company a perpetual injunction against Secretary Wilbur.

# PENN POOL IN ECTOR COUNTY, TEXAS, RAPIDLY GROWING IN IMPORTANCE

By L. G. E. Bignell
*Petroleum Engineering Editor*

ODESSA, Tex., Apr. 5.—The Ector County oil field, located about 15 miles west of this city on the Bankhead highway, is rapidly becoming a pool of considerable importance and four of the major pipe line companies have already laid lines into it to handle the oil as produced.

This field was opened by the Penn-Humble-Atlantic Companies and now has 7 producing wells with about 27 more wells drilling or located. The Independent Oil & Gas Co. has a test about a mile north of the present production and the Texas and Pacific Coal and Oil Co. has another about a half mile northwest of the Independent location. These wells are located north of the Texas-Pacific Railroad and if productive will mean a great deal for this pool.

The production is being found at about 3,750 feet, in a Permian lime formation, much like that of the Crane County Field to the south. The oil has a gravity of about 36 A.P.I. scale, and has the hydrogen sulphide and sulphur contents characteristic of the limestone production of West Texas.

The wells have been drilled with cable tools and it has been customary to set about 800 to 1,000 feet of 10-inch casing. The 8¼-inch string is usually set at about 2,500 feet and the 6⅝-inch casing finishes the cased hole at about 3,400 feet. The hole is drilled from the bottom of the 6⅝-inch string into the production at 3,750 feet and the hole left open.

The Landreth Oil Co. finished the furthest south well on March 15 with an initial production of about 650 bbls. South of this well there is a large block of University Land in Block 35, Ector County, that extends into the north part of Crane County.

The University of Texas sold two blocks in this pool March 29, one to the Skelly Oil Co., and the other to Transcontinental Oil Co. The piece bought by Skelly Oil Co. is between the Cosden-B lease and another Skelly lease and it is reported as having been sold for $77,-75o.

The piece bought by the Transcontinental Oil Co. is 160 acres between the Landreth-T lease and the Prairie Oil and Gas Co. 160-acre lease, and is reported to have cost $96,000.

The University of Texas land department does not intend to offer any of the land in Block 35, to the south of the area of development at this time, preferring to hold this to restrict drilling in that direction awaiting the results of wells now being drilled in the proven part of the pool.

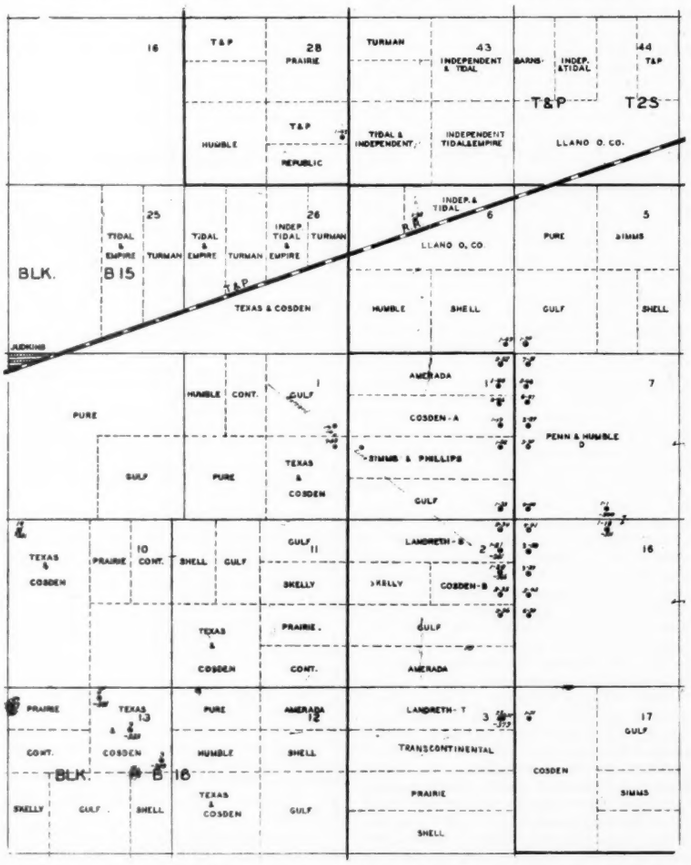
### May Be Another Hendricks

If the wells now being drilled, or about to be started, are productive, this field promises to be about the size of the Hendricks Field in Winkler County.

An interesting wildcat is now drilling about 25 miles north of Odessa in a new area. This well is being drilled by Black and Penn Drilling Co. on acreage owned by the Devonian Oil Co. and is known as their Garber No. 1.

Due south of Odessa about 4 miles C. P. Davis has a lease on about 5,000 acres belonging to Tom Hendrick. Mr. Davis has agreed to give half of this acreage to Folber and Evans if they will drill a well. This well has been started and good progress is being made.

Another field that will mean a great deal to Odessa is the one located in Andrews County about 38 miles northwest of this city. The discovery well was drilled by the Deep Rock Oil Co. of Ft. Worth and completed for about 175 bbls. initial production of 34 gravity oil. It is reported that this well is finished in the Permian lime at a total depth of 4,425 feet.




*The Penn Pool in Ector County, Texas, opened by a jointly owned well of R. R. Penn, the Atlantic Oil Producing Co. and the Humble Oil & Refining Co. This new discovery is looked upon as an important potential producing area which may rival the Hendricks Pool in Winkler County. The map shows present producing wells, drilling wells and locations and acreage ownership near the center of operations.*

### Odessa Headquarters

All of this activity around Odessa is causing a number of the leading oil well supply companies to locate their district offices and warehouses in Odessa. The Gulf Production Co. recently moved its large machine and blacksmith shops from Breckenridge, Tex., to Odessa.

To accommodate the oil men of this section George Elliott, proprietor of the Elliott Hotel at Odessa, is adding a five-story, fireproof steel addition to his hotel which will add 56 rooms to this building, making a total of 140 rooms with baths. It is also planned to build a roof garden on top of the present hotel building. The hotel will be complete in every detail and will undoubtedly be the headquarters for the oil men of that region as it has been for many years past.

With the possibility of development of the large deposits of potash known to exist south of Odessa and the new activity in oil pools in every direction it appears that this city will enjoy a very prosperous future and will have a rapid increase in population.

## NEW VOLUME ON WELDING OUT

The seventh edition of the Welding Encyclopedia, compiled and edited by L. B. Mackenzie and H. S. Card, has been issued by the publishers, the Welding Engineer Publishing Co., Chicago. The book contains 540 pages, with 670 illustrations, and has flexible imitation leather binding. Two hundred pages of the book are devoted to definitions and discussions of words and terms used in welding literature. This is followed by treatises on gas, arc, resistance and thermit welding, which include instructions for welding all of the commercial metals by each of these processes. Separate chapters are devoted to such important applications of welding as pipe, tanks, boilers and structural steel. The subject of cutting and the subject of training operators are also given separate treatments. In the new edition extensive additions have been made to include up to date information on some of the newer applications of welding, such as aircraft welding, welding of machine parts, and structural steel welding. Other important additions deal with the welding of special alloy steels and the welding of nonferrous metals and their alloys.

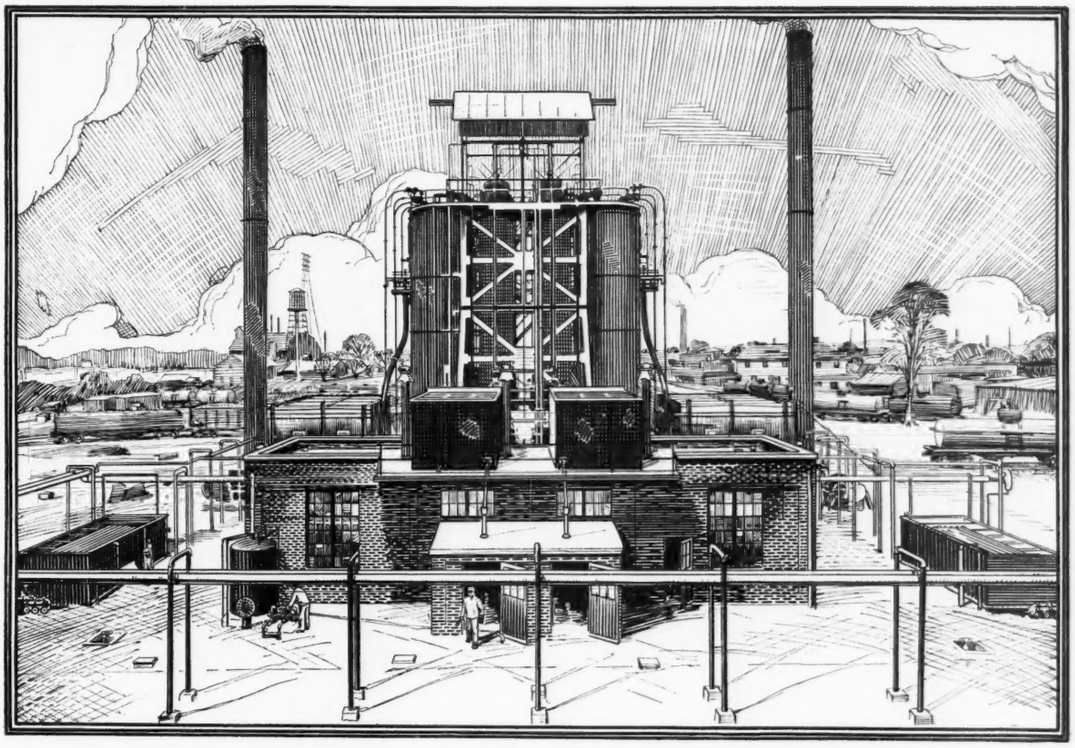
## NONINFLAMMABLE HYDROGEN

WASHINGTON, D. C., Apr. 5.—Dr. Hugo Eckener, commander of the Graf Zeppelin, has informed Postmaster General Brown that chemists are now at work on a process for making hydrogen gas noninflammable and he was confident that the experiments would prove entirely satisfactory.

"I believe that supplies of helium gas will be discovered in other places than the United States," Doctor Eckener declared. "While there is plenty of natural gas in Rumania, it does not contain any helium so far as known," he continued.

The commander of the Graf Zeppelin expressed his belief that a noninflammable gas would be produced in sufficient quantities for use on lighter-than-air craft just as soon as the cost of production could be reduced.

"This is the major problem confronting us at present," he stated.



# What McKee Offers to the Refiner

TO the refiner who is confronted by the necessity of alterations or additions to his present equipment our knowledge and experience in the solution of these problems is available.

With the close co-operation of our process designing division and construction division the refiner can obtain the utmost in quality and yield of desired products at a minimum cost.

A confidential discussion of your present refining operations or future program will entail no obligation.

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# Of Interest to Sales Departments

## Normal Increase in Motor Fuel Demand Throughout January

Gasoline consumption in 43 states for the month of January, 1930, as indicated by reports made by wholesalers and dealers in the various states under provisions of the gasoline tax laws or gasoline inspection laws totaled 668,990,000 gallons, compared with 610,611,000 gallons in January, 1929, an increase of 58,379,000 gallons, or 9.6 per cent. Daily average consumption for January, 1930, was 21,580,000 gallons, compared with a daily average of 24,283,000 gallons in December, 1929, a decrease in daily average during January of 11.1 per cent.

The figures giving the quantity of gasoline sold or offered for sale, as reported under the various laws, follow. In some cases they are gross figures, before deductions allowed for small quantities of gasoline reshipped or sold for other than taxable use, the tax upon which, if paid, is subsequently refunded. All figures which are subject to revision were compiled by the American Petroleum Institute:

**GASOLINE CONSUMPTION BY STATES, JANUARY, 1930**

| | Month of | |
|---|---|---|
| | Jan., 1930 | Jan., 1929 |
| Alabama | 13,536,000 | 12,398,000 |
| Arizona | 5,935,000 | 5,306,000 |
| Arkansas | 10,921,000 | 10,706,000 |
| Colorado | 9,964,000 | 9,850,000 |
| Connecticut | 12,824,000 | 10,989,000 |
| Delaware | 2,406,000 | 1,919,000 |
| District of Col'bia | 5,452,000 | 4,865,000 |
| Florida | 22,012,000 | 20,522,000 |
| Georgia | 17,423,000 | 15,705,000 |
| Idaho | 2,577,000 | 2,214,000 |
| Indiana | 27,670,000 | 23,740,000 |
| Iowa | 23,980,000 | 20,420,000 |
| Kansas | 21,732,000 | 19,919,000 |
| Kentucky | 10,048,000 | 8,927,000 |
| Louisiana | 13,993,000 | 12,239,000 |
| Maine | 3,523,000 | 3,038,000 |
| Massachusetts | 34,655,000 | 26,628,000 |
| Michigan | 47,036,000 | 42,827,000 |
| Minnesota | 22,131,000 | 18,969,000 |
| Mississippi | 10,829,000 | 9,843,000 |
| Missouri | 26,877,000 | 24,572,000 |
| Nebraska | 15,545,000 | 15,134,000 |
| Nevada | 929,000 | 941,000 |
| New Hampshire | 2,627,000 | 2,270,000 |
| New Jersey | 32,638,000 | 28,316,000 |
| New Mexico | 3,407,000 | 2,814,000 |
| North Carolina | 21,240,000 | 22,682,000 |
| North Dakota | 3,047,000 | 4,908,000 |
| Ohio | 62,162,000 | 55,433,000 |
| Oklahoma | 20,154,000 | 22,559,000 |
| Oregon | 7,089,000 | 8,894,000 |
| Rhode Island | 5,081,000 | 4,003,000 |
| South Carolina | 8,803,000 | 8,251,000 |
| South Dakota | 7,662,000 | 6,737,000 |
| Tennessee | 14,047,000 | 13,187,000 |
| Texas | 53,588,000 | 53,994,000 |
| Utah | 3,706,000 | 3,110,000 |
| Vermont | 1,793,000 | 1,618,000 |
| Virginia | 14,374,000 | 12,456,000 |
| Washington | 14,335,000 | 14,422,000 |
| West Virginia | 7,109,000 | 6,015,000 |
| Wisconsin | 22,444,000 | 15,659,000 |
| Wyoming | 1,686,000 | 1,612,000 |
| Total | 668,990,000 | 610,611,000 |
| Daily average | 21,580,000 | 19,697,000 |
| Increase over previous year: | | |
| Am't of increase | 58,379,000 | |
| Percentage increase daily average | 9.6% | |
| New York | 91,977,000 | |

### GAIN IN TOTAL EXPORTS

WASHINGTON, D. C., Apr. 7.—There was an increase in the exports of both crude oil and gasoline during the month of February over the preceding month, according to the preliminary announcement made by the Department of Commerce. Gasoline, naphtha and other light products exported in February amounted to 4,835,064 bbls. valued at $20,782,233 compared with 3,796,941 bbls. valued at $17,496,659 in January. Total refined petroleum exported amounted to 9,400,336 bbls. valued at $36,778,490 compared with 8,925,193 bbls. valued at $35,019,553 in January. Exports of crude petroleum amounted to 1,730,519 bbls. valued at $2,346,127 compared with 1,678,300 bbls. valued at $2,115,573 in the previous month.

## GERMAN CONSUMERS MAKE PLEA FOR REDUCTIONS IN GASOLINE PRICES

By Charles E. Kern
*Washington Bureau, The Oil and Gas Journal*

WASHINGTON, D. C., Apr. 7.—German owners of automobiles are demanding lower gasoline prices while the German government is desirous of increasing the price of gasoline by placing a tax of 10 marks per 100 kilos on gasoline and benzol. This is equivalent to a tax of 10 marks on every 25 gallons of gasoline, or about 10 cents American money per gallon of gasoline. The act placing this tax has passed the Reichsrat, one branch of the German parliament, and is pending in the Reichstag.

The demand for cheaper gasoline in Germany has become nation-wide and has led to discussions of all possible means for bringing about a lower price. Motorists and engineers vie with each other in advocating measures for cheaper fuel.

In the Rhine district a private garage company has reduced the regular price and this has added stimulus to the demands of the motorists. German technical journals declare that if car owners are to increase in number or even to maintain the present number of vehicles on the roads, the price of gasoline must come down.

The Cartel system, originating and most popular in Germany, controls gasoline prices under the immediate supervision of the Gasoline Association. Six oil companies, three American, two British and one Russian, supply 95 per cent of the gasoline consumed in Germany. This demand comes from 40,000 filling stations, 36,000 of which are under the direct influence of this association known as the Benzin-Konvention. It has been shown that it is not possible to force down the prices of the Convention by cutting them in single or scattered communities.

On the other hand, the Gasoline Convention asserts that prices in Germany are barely profitable, stating that the cost of delivery of gasoline to consumers is, in Germany, 33 pfennigs per liter, or approximately 30 cents per United States gallon, including freight, import duty, etc.; and that a retail selling price of from 34 to 36 pfennigs (31 to 32½ cents per gallon) leaves but a negligible profit margin.

The several factors included in the cost of production are estimated as follows: Purchase price, 10 cents per gallon of 64-66° Be., or 11.1 pfennigs per liter; ocean freight, storage, etc., 2.3 pfennigs per liter; import duty, 5.6 pfennigs per liter; addition of benzol, 1 pfennig; distribution and freight to filling station, 2.7 pfennigs; amortization of filling stations, 6.5 pfennigs, and handling cost at station, 4 pfennigs per liter. The total of 33.2 pfennigs is but slightly below the local prices of 33 and 34 pfennigs, and below the average German price of 35.5 pfennigs per liter.

**Low-Priced Gasoline**

Sponsors of lower gasoline prices, on the other hand, assert that a price of 20 pfennigs per liter (18 cents per gallon) would still leave a profit margin for the producers. The above price is based on figures given by the Convention, which state the purchase price, inclusive of ocean freight, as 13 pfennigs per liter. This price of 13 pfennigs per liter (11.7 cents per gallon) may be considered the average purchase price, which has to be paid by all European countries.

The foregoing statement of costs is the result of a very careful analysis of the oil industry as it is conducted in Germany today and it indicates conditions adding to cost price that can hardly be overcome.

On the other hand, the advocates of a lower price declare that the German net profit per liter of gasoline is 10 pfennigs higher than in the case of France and it seems that Germany pays a higher c.i.f. landed price than all other countries, although as a matter of fact, it is admitted, German authorities say that gasoline is exported, at least from the United States, at a uniform f.o.b. price irrespective of destination.

The foregoing conditions have caused a popular approval and support of efforts to increase the output of synthetic gasoline. At the present time the I. G. Farbenindustrie has an output of 100,000 metric tons, or about 700,000 bbls. of synthetic gasoline which is the present annual capacity of this organization which provides for about one-ninth of the total German consumption or fuel used in the automotive industry.

German imports of gasoline in 1929 amounted, according to German statistics, to 1,155,000 metric tons which were not entirely destined for automobile consumption. A large percentage of this quantity of gasoline was employed for industrial consumption, while kerosene, which the German statisticians included in the above figure, also accounted for a large part of German imports of "gasoline."

**Synthetic Gasoline**

The growing importance of synthetic gasoline, however, it has been stated on the authority of responsible German writers, lies in the ability of Germany to make itself, whenever required, independent of a foreign supply of gasoline by the enlargement of existing plants for synthetic production. This statement can hardly be credited here in view of the strenuous efforts made in France and other countries to create a home supply of motor fuel. However, from Germany comes the statement that synthetic gasoline sold under the name of "Motalin" has gained a good foothold among German consumers and that the reluctance toward the use of this product, which existed in the early stage of

(Continued on Page 216)

### PYRIDINE IN SHALE OIL

Experiments intended to determine the presence of pyridine or its compounds in crude shale oil pressure distillate have been conducted by the United States Bureau of Mines in co-operation with the State of Colorado at the University of Colorado, Boulder. Crude shale oil from a Pumpherston retort was cracked at 130 pounds still pressure. This condensate was clear, water white and contained an appreciable quantity of pyridine or pyridine compounds.

### RULE ON TAX COLLECTION

The District of Columbia tax on gasoline provided by law of Congress cannot be imposed on fuel purchased by the Secretary of the Treasury for use in the District of Columbia by Government agencies. This decision was handed down by the Court of Appeals of the District of Columbia affirming the decision in the Supreme Court of the District of Columbia. It was the case of the District against the American Oil Co., the amount involved being $6,193, which was the amount of taxes on gasoline imported into the District by the American Oil Co.

### COMPLETE FIRST REPORT ON FOREIGN FACILITIES

WASHINGTON, D. C., Apr. 7.—The United States Shipping Board has inaugurated a plan for giving exporters and importers a thorough knowledge of every port of the world and when this plan has been completed the oil industry will have at hand every shipping detail relating to these ports that could be desired. The first study of foreign port facilities relates to the port of Hamburg and it furnishes every fact concerning shipping conditions there needed by an oil company delivering or receiving cargos in oil tankers.

Not only are the oil bunkering facilities shown but storage facilities also are fully explained so that every exporter of American goods of whatever kind may know in advance just what oil he will be able to get, the companies providing it, and the quantities on hand together with every detail of port regulations that could be desired. Of course this information relates to both oil and coal.

Exporters are also given information to assist in determining economical routes and all reliable information as to the cost of ship operation and conditions surrounding the handling of cargo and vessels in foreign ports. This is all done in connection with the authority granted under the Merchant Marine Act of 1920.

### DISCOUNTS FOR EMPLOYES

Anouncement has been made by E. L. Shea, vice president of the Tide Water Oil Co. in charge of sales, of a plan whereby the Tide Water Sales Corp. offers to employes cash discounts on gasoline and oil at company-owned and controlled stations. The plan is set forth in the following statement:

"The Sales corporation of the Tide Water Oil Co. has made arrangements whereby the employes of the company may receive cash discounts of 2 cents per gallon on gasoline and 5 cents per quart on oil at company-owned and controlled stations in the East.

"Employes' discount cards will be issued to employes by the personnel and industrial relations department, New York, through department managers only."

Employes are required to furnish their supervisors with the license number of their cars. The discount card will be good up to December 31, 1930. Employes are required to turn in these cards before receiving their last pay on leaving the service of the company.

### 156,000,000,000 MILES IN 1930

"Automobiles of America will travel 156,000,000,000 miles in 1930," says Alvan Macauley, president of the National Automobile Chamber of Commerce and president of the Packard Motor Car Co. "Early reports of state registrations indicate a total of more than 26,000,000 in the United States, and various studies give 6,000 miles as the average distance traveled per vehicle each year."

### TO MEET MONTHLY

Regular meetings of the National Committee on Interpretation of the Code, which has final jurisdiction in interpreting provisions of the National Code of Practices for Marketing Refined Petroleum Products, will be held on the first Tuesday of each month, it was announced today by H. T. Klein, of The Texas Company, New York, chairman.

The sessions will be held at the headquarters of the American Petroleum Institute, 250 Park Ave., New York.

FORM 2 15 LONG 200M [redacted]

THE [redacted] OIL COMPANY
INTER-COMPANY COMMUNICATION

TO
Refer to Mr. [redacted]
Place
Subject

FROM
Division [redacted] Refinery,
Place [redacted]
Date August 30, 1929.

Dear Mr. [redacted]

On Wednesday afternoon, [redacted], we had quite an electrical storm at [redacted], which lasted for about a half-hour. During the period of the storm a flash of lightning caused the vapor on Tank #213 to ignite at the OCECO Safety vent. This burned for about one minute and then went out of its own accord.

In the tank at the time we had 9,000 barrels of straight run gasoline.

This is the first time that we have experienced at [redacted] a fire caused by lightning and there was quite a bit of excitement for a short while, but fortunately there was no damage done.

Yours very truly,

[redacted]

Superintendent

# A Severe Electrical Storm
## and
# A Tank of Straight Run Gasoline

THIS is just another instance where foresight was responsible for a big saving—this company's tanks were OCECO equipped.

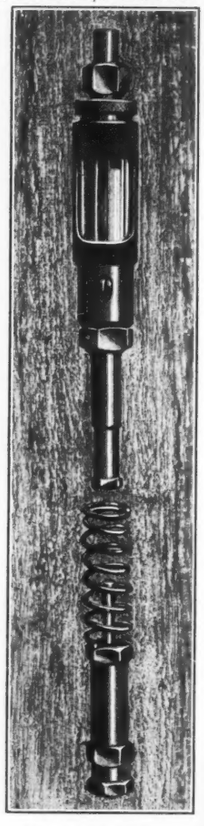
**THE OIL CONSERVATION ENGINEERING CO.**
877 ADDISON ROAD ❖ CLEVELAND, OHIO

*Engineering and Sales Service:*

25 Broadway, New York
Box 552, Beaumont, Texas
Tulsa Trust Bldg., Tulsa, Okla.
Neilan, Schumacher & Co., Los Angeles, Cal.

# McCORD

## A BETTER LUBRICATOR



### Precision Built to Supply Better Lubrication

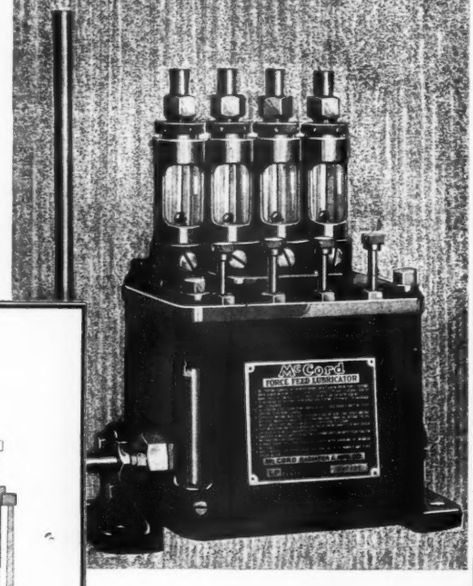
The pump unit is the heart of a McCord "LF" Lubricator. Precision built, it has the positive action of a machine gun, forcing oil in measured quantities to the cylinder wall or points of lubrication.

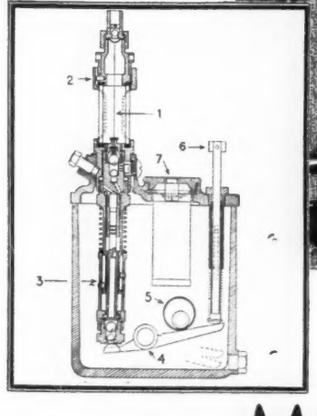
Positive and quickly made adjustments assure that accurate timing and positive delivery will be maintained.

**The McCord "LF" Pump Unit**

The pump unit and sight feed are combined in one unit. The sight feed glass for each feed is placed in the discharge line and shows the actual amount of lubricant being forced to each point of lubrication. The "LF" pump construction insures that all of the oil shown in the sight feed glass will reach the point of lubrication.

The pump unit is easily removed by loosening a single holding screw.




McCORD

RADIATOR & MFG. CO., DETROIT, MICH.

LUBRICATOR DIVISION


## LOUISIANA-ARKANSAS PROVEN AREAS

(Continued from Page 63)

W, NE cor., Sec. 26-23-12 ..... Drilled out cmt. to 2,965 ft; 2,200 ft. fluid, 50% wtr.; setting tubing; T.D. 3,180 ft.

Bahan & Bahan's No. 1 Floyd Pleasant, 150 ft. N, 150 ft. W, C, Sec. 25-23-12 ..... Began drlg. Mar. 26; cmtd. 10-in. 365 ft; drlg. 550 ft.

E. W. Bateman's No. 1 Bollinger, 200 ft. S, 200 ft. E, NW cor., Sec. 38-23-11 ..... Began drlg. Mar. 26; cmtd. 10-in. 345 ft; drlg. 450 ft.

E. W. Bateman's No. 2 Bollinger, 200 ft. S, 200 ft. W, NE cor. Lot 29, Sec. 38-23-11 ..... Location.

Del.-La. Dev. Co.'s No. 6 Bollinger, 330 ft. S, 220 ft. W, NW cor. Lot 17, in Lot 16, Sec. 31-23-11 ..... Cmtd. 6⅝-in. 3,182 ft; drlg. 3,207 ft.

Askew & Goodman's No. 1 Roberson, 330 ft. S, 282 ft. W, NE cor. SW SW, Sec. 25-23-11 ..... Drlg. 2,600 ft.

Greenwood Prod. Co.'s No. 1 Bollinger, 1,980 ft. N, 1,150 ft. E, SW cor. SE, Sec. 36-23-12 ..... Coring 3,146 ft.

Goodman-Johnson's No. 1 Martin, 330 ft. S, 330 ft. E, NW cor. SE, Sec. 26-23-12 ..... W.O.S.R; T.D. 3,169 ft.

Eylers O. & G. Co.'s No. 1 Wise, 330 ft. S, 330 ft. W, NE cor., Sec. 35-23-11 ..... Drlg. 1,700 ft.

Haynes Bros.' No. 1 Martin, Sec. 26-23-12 ..... D.S. test 3,126-36 ft; 4 fourbles S.W; show of oil; T.D. 3,152 ft; arranging to deepen.

H. L. Hunt's (was Love et als') No. 1 Allen, SE cor. NE NE, Sec. 30-23-11 ..... Rig up.

H. L. Hunt, Inc.'s No. 5 J. W. Peyton, 990 ft. W, 330 ft. S, NE cor. SE, Sec. 25-23-12 ..... Drlg. 2,440 ft.

H. L. Hunt, Inc.'s No. 7 J. W. Peyton, 990 ft. S, 990 ft. E, C, Sec. 25-23-12 ..... D.S. test 3,104 ft; dry; drlg. 3,337 ft.

H. L. Hunt, Inc.'s No. 8 J. W. Peyton, 990 ft. E, 330 ft. S, C, Sec. 25-23-12 ..... Location.

H. L. Hunt, Inc.'s No. 9 J. W. Peyton, 330 ft. S, 330 ft. E, C, Sec. 25-23-12 ..... Location.

H. L. Hunt, Inc.'s No. 10 J. W. Peyton, 990 ft. S, 330 ft. E, C, Sec. 25-23-12 ..... Rigging up.

Lide et als' No. 1 Matlock, 2,970 ft. S, 990 ft. E, NW cor., Sec. 26-23-12 ..... Drlg. 3,000 ft.

Lide et als' No. 1 Farrington, 330 ft. N, 330 ft. W, SE cor. NW NW, Sec. 22-23-12 ..... Coring 3,127 ft.

La. Pet. Corp.'s No. 2 Bain, 330 ft. S and E, NW cor. SW NW, Sec. 31-23-11 ..... Coring 3,170 ft; sand 3,139-41 ft.

La. Pet. Co.'s No. 3 Bain, Sec. 31-23-11 ..... Coring 3,250 ft.

Magnolia Pet. Co.'s No. 1 E. C. Dodson, Sec. 16-23-12 .. D.S. test 3,236 ft; S.W; drlg. 3,338 ft.

Magnolia Pet. Co.'s No. 2 Matlock, 330 ft. S and W, NE cor. SE SW, Sec. 25-23-12 ..... Cmtd. 13⅜-in. 372 ft; drlg. 1,106 ft.

Magnolia Pet. Co.'s No. 1 Roberson, Sec. 26-23-12 ..... D.S. test 1,389 ft; 1 joint oil; 14 joints drill wtr; drlg. gummy shale 3,241 ft.

Magnolia Pet. Co.'s No. 3 Matlock, 330 ft. N, 330 ft. W, SE cor. SE SW, Sec. 25-23-12 ..... Derrick.

Nat. Gas Prod. Co.'s No. 3 U. S. Govt., 1,520 ft. S, 2,580 ft. E, NW cor., Sec. 31-23-11 ..... Location.

Nat. Gas Prod. Co.'s No. 4 U. S. Govt., 2,440 ft. S, 2,580 ft. E, NW cor., Sec. 31-23-11 ..... Location.

Olsen Bros. and Ingall's No. 1 Pine Woods Lbr. Co., SE cor. NW NW, Sec. 25-23-12 ..... Location.

Phillips Pet. Co.'s No. 2 Bolin (was No. 1-A Bollinger) (formerly Sales & Walker's No. 4 Bollinger), 696 ft. S, 1,120 ft. E, NW cor. SW, Sec. 30-23-11 ..... Perforated 6⅝-in. 3,113-23 ft.; 300 ft. oil in hole; W.O.S.R.; T.D. 3,247 ft.

Phillips Pet. Co.'s No. 3 Bolin, 700 ft. E, 265 ft. S, NW cor. SW SW, Sec. 30-23-11 ..... Coring 3,130 ft.

Phillips Pet. Co.'s No. 4 Bolin, NW cor. E½, NW SE, Sec. 30-23-11 ..... Drlg. 2,500 ft.

Phillips Pet. Co.'s No. 1 Bolin, 390 ft. E, 236 ft. N, N, SW cor. Lot 16, Sec. 30-23-11 ..... Derrick.

Phillips Pet. Co.'s No. 1 Floyd, 330 ft. S, 330 ft. W, C, Sec. 25-23-12 ..... Rig up.

The Texas Co.'s No. 2 Peyton, 990 ft. N, 330 ft. W, SE cor., Sec. 25-23-12 ..... W.O.S.R. 3,195 ft.

The Texas Co.'s No. 4 Peyton, 990 ft. E, 330 ft. N, SW cor., Sec. 30-23-11 ..... 300 ft. oil in hole; arranging pull liner and perforated; T.D. 3,200 ft.

The Texas Co.'s No. 5 Peyton, 330 ft. N, 330 ft. W, SE cor., Sec. 25-23-12 ..... Derrick.

The Texas Co.'s No. 6 Peyton, 330 ft. N, 330 ft. E, SW cor., Sec. 30-23-11 ..... Cmtd. 6 in. 3,133 ft.; T.D. 3,156 ft.

The Texas Co.'s No. 5 Wilkinson, 1,470 ft. S, 150 ft. W, NE cor., Sec. 36-23-12 ..... Began drlg. Mar. 29; cmtd. 10-in. 380 ft.; drlg. 1,870 ft.

John Woodley et als' No. 2 L. & A., 990 ft. N, 990 ft. W, SE cor., Sec. 14-23-12 ..... Cored sandy shale 3,148-51 ft.; show oil at 3,153 ft.

Woodley et als' No. 1 Roberson, 330 ft. N, 330 ft. W, SE cor. SW NE, Sec. 22-23-12 ..... Cmtd. 10-in. 300 ft.

**CADDO PARISH—GREENWOOD**

Calatex O. & G. Co.'s No. 2-A Agurs, 1,325 ft. S, 1,304 ft. E, NW cor., Sec. 7-16-16 ..... Rigging up.

**CADDO PARISH—HOSSTON**

Bayou State Oil Corp.'s No. 29 Jolly, 425 ft. W, 775 ft. N, SE cor. NE ..... W.O.S.R. 1,014 ft.

**CADDO PARISH—MOORINGSPORT DISTRICT**

Falcon Oil Co.'s No. 3 Nunnelly, 2,832 ft. N, 3,693 ft. E, SW cor., Sec. 29-20-15 ..... Began drlg. Mar. 28; cmtd. 10-in. 80 ft.; drlg. 450 ft.

**CADDO PARISH—OIL CITY**

Gulf Ref. Co.'s No. 25-A Levee Board, 1,520 ft. S, 200 ft. E, NW cor., Sec. 34-21-16 ..... Cmtd. 6⅝-in. 1,800 ft.

Gulf Ref. Co.'s No. 26-A Levee Board, 2,440 ft. S, 200 ft. E, NW cor., Sec. 34-21-16 ..... Location.

H. M. Matson's No. 1 U. S. Govt., 900 ft. E, 400 ft. S, NW cor. ..... W.O.S.R. 2,292 ft.

Standard Oil Co.'s No. 19 J. J. Hart, 1,305 ft. E, 1,120 ft. S, NW cor., Sec. 34-21-16 ..... Derrick.

The Texas Co.'s No. 72 Levee Board, 725 ft. N, 210 ft. E, SW cor. SE, Sec. 27-21-6 ..... Cleaning out at 1,848 ft.; T.D. 1,852 ft.

The Texas Co.'s No. 73 Levee Board, 1,642 ft. E, 780 ft. N, SW cor. SW SE, Sec. 27-21-16 ..... Location.

**DE SOTO PARISH—KINGSTON**

Ark. Fuel Oil Co.'s No. 1 Mrs. C. B. Scott, 330 ft. N, 330 ft. W, SE cor. NW, Sec. 32-14-13 ..... Began drlg. Mar. 28; cmtd. 10-in. 106 ft.; drlg. 450 ft.

R. O. Roy's No. 1-B Farmer, 660 ft. S, 660 ft. E, NE SW, Sec. 13-13-13 ..... Derrick.

R. O. Roy's No. 1 Lee, 660 ft. N, 660 ft. E, SW cor., Sec. 33-14-13 ..... Rig up.

**LA SALLE PARISH—URANIA**

Ark. Fuel Oil Co.'s No. 5 Urania, 200 ft. S, 200 ft. E, NW cor. NE SE, Sec. 24-10-1e ..... Drlg. 5,467 ft.

Gulf States Gas Co.'s No. 1 Urania, 250 ft. W, 150 ft. S, NE cor., Sec. 1-10-1e ..... S.D. 1,000 ft.

Hope Oil Co.'s No. 5 Urania, 660 ft. E, 150 ft. S, NW cor. SW SW, Sec. 19-10-2e ..... Derrick.

Kinney, Hardtner & Randall's No. 1 Kinney, SW SW, Sec. 7-10-2e ..... S.D. 1,570 ft.

**MOREHOUSE PARISH**

Bahan & Bahan's No. 3 Feazel, 990 ft. S, 990 ft. W, NE cor., Sec. 2-20-4 ..... Cmtd. 6-in. 2,088 ft.

Bahan & Bahan's No. 4 Feazel, 900 ft. W, 330 ft. S, NE cor., Sec. 2-20-4 ..... Location.

J. S. Herkness' No. 12 Bowles, 3,392 ft. E, 3,300 ft. S, NW cor., Sec. 18-20-5 ..... S.D.; junked; T.D. 2,737 ft.

La. G. & F. Co.'s No. 26 Crossett, 645 ft. E, 574 ft. S, NW cor. Lot 9, Sec. 33-21-5 ..... Location.

La. G. & F. Co.'s No. 27 Crossett, N 67° 30 ft. E 2,079 ft; N 20° 30 ft. W 594 ft., SW cor. Lot 3, Sec. 33, in Sec. 45-21-5 ..... Derrick.

Magnolia Pet. Co.'s No. 8 U. S. Govt., 310 ft. S, 410 ft. E, NW cor. Lot 4, Sec. 33-21-5 ..... Drlg. shale and boulders 2,044 ft

Southern Carbon Co.'s No. 14 Tensas, 660 ft. N, 660 ft. E, SW cor. NW, Sec. 34-21-4 ..... Cmtd. 6-in. 2,187 ft.

**OUACHITA PARISH**

Chauvin Gas Co.'s No. 4 Slagle Johnson, 647 ft. W, 2,803 ft. S, NE cor., Sec. 47-18-4 ..... Cmtd. 6-in. 2,139 ft.

Hope Prod. Co.'s No. 2 Fairbanks, 1,876 ft. E, 623 ft. N, SW cor. SE, Sec. 25-20-4 ..... Location.

Hope Prod. Co.'s No. 3 Fairbanks, 1,876 ft. E, 628 ft. S, NW cor. NE, Sec. 36-20-4 ..... Killed blowout; pulling D.S.; T.D. 2,302 ft.

Jordan Drlg. Co.'s No. 6 Cole, 1,596 ft. W, 2,388 ft. N, SE cor., Sec. 49, in Sec. 50-18-4 ..... Rigging up.

Jordan Drlg. Co.'s No. 7 Cole, 265 ft. S, 1,459 ft. W, NE cor., Sec. 49, in Sec. 50-18-4 ..... Location.

Jordan Drlg. Co.'s No. 2 Percboom, 1,207 ft. W, 264 ft. S. C. Sec. 9-18-4 ..... Location.

Jordan Drlg. Co.'s No. 1 School, 216 ft. S, 244 ft. W, NE cor. NW, Sec. 16-18-4 ..... Location.

La. G. & F. Co.'s No. 2 Beard, S 80° 50 ft; W 891 ft; S 31° E 489 ft; NE cor., Sec. 43-18-4 ..... Rig up.

Magnolia Pet. Co.'s No. 2 fee 401, 660 ft. S, 660 ft. E, NW cor., Sec. 2-18-3 ..... Derrick.

Sho-Van Gas Products Co.'s No. 4 W. Va., 1,073 ft. N, 294 ft. W. NE cor., Sec. 49, in Sec. 7 ..... Cmtd. 12½-in. 182 ft; 8-in. 772 ft; drlg. 2,100 ft.

Union Gas Products Co.'s No. 1 Hare, 660 ft. S, 660 ft. W, NE cor. NW, Sec. 22-19-5 ..... D.S. test 2,565 ft.; dry; W.O.

United Oil & Nat. Gas Products Co. of La.'s No. 5 Guthrie, 6,396 ft. N, 6,022 ft. W, cor. Secs. 49, 26, and 25, Sec. 49-20-5 ..... Derrick.

United Carbon Co.'s No. 2 Puckett, 660 ft. N, 660 ft. E, SW cor. SW, Sec. 15-19-5 ..... Drlg. 2,775 ft.

United Carbon Co.'s No. 5 Spade, 842 ft. W, 1,758 ft. S, NE cor., Sec. 34-19-4 ..... Derrick.

United Carbon Co.'s No. 6 Spade, 1,180 ft. S, 140 ft. E, NW cor., Sec. 27-19-4 ..... Location.

United O. & N. G. Co.'s No. 2 Cole, 660 ft. S, 594 ft. E, C, Sec. 26-20-4 ..... Derrick.

**RICHLAND PARISH**

Ark.-La. P. L. Co.'s No. 4 Sartor, 660 ft. S, 1,320 ft. E, NW cor. SW, Sec. 18-16-6 ..... Location.

W. C. Feazel's No. 1 R. B. Simon, 2,406 ft. W, 2,020 ft. S, NE cor., Sec. 11-16-6 ..... Rig up.

International Gas Prod. Co.'s No. 1 Minnie LaGrone, 769 ft. N, 858 ft. E, SW cor., Sec. 7-16-7 ..... Location.

La. G. & F. Co.'s No. 1-A Mulhern, 1,731 ft. N, 2,242 ft. E, SW cor. NW, Sec. 32-17-6 ..... Cmtd. 6-in. 2,300 ft.

La. G. & F. Co.'s No. 2-C F. B. Sartor, 750 ft. N, 945 ft. E, C, Sec. 20-16-6 ..... Began drlg. Mar. 27; cmtd. 12½-in. 183 ft

Palmer Corp.'s No. 1 B. F. Chapman, 3,300 ft. S, 1,330 ft. W, NE cor., Sec. 35-16-6 ..... Derrick.

Palmer Corp.'s No. 1-A Earl, Sec. 2-16-6 ..... Drlg. 5-in. plug; T.D. 2,480 ft.

Palmer Corp.'s No. 1 Louise Rhymes, 1,335 ft. N, 906 ft. E, SW cor., Sec. 32-17-6 ..... Rig up.

Palmer Corp.'s No. 7 Rhymes, 660 ft. N, 660 ft. E, SW cor., Sec. 7-16-6 ..... Drlg. shale and boulders 1,824 ft.

Palmer Corp.'s No. 8 Rhymes, 1,008 ft. E, 635 ft. S, NW cor., Sec. 33-17-6 ..... Location.

Palmer Corp.'s No. 9 Rhymes, 733 ft. N, 1,278 ft. E, SW cor., Sec. 4-16-6 ..... Rig up.

Richland Operating Co.'s No. 2 Traylor, 1,000 ft. E, 477 ft. N, C, Sec. 25-16-6 ..... Began drlg. Mar. 26; cmtd. 12-in. 186 ft., 8-in. 860 ft.

Southern Carbon Co.'s No. 1 Hale, 660 ft. N, 760 ft. W, SE cor., Sec. 16-16-6 ..... Recmtd. 6-in. 2,282 ft.; T.D. 2,460 ft.

Southern Carbon Co.'s No. 1 Lindow, 3,300 ft. W, 1,320 ft. S, NE cor., Sec. 16-16-6 ..... Cmtd. 6-in. 2,303 ft.

Southern Carbon Co.'s No. 1 McCoy, 1,980 ft. E, 3,300 ft. S, NE cor., Sec. 16-16-6 ..... Fishing D.S.; T.D. 2,450 ft.

Southern Carbon Co.'s No. 1 W. E. Landers, 1,980 ft. N, 1,220 ft. E, SW cor., Sec. 10-16-6 ..... Began drlg. Mar. 29; drlg. 180 ft.

Southern Carbon Co.'s No. 1 L. S. Mulhern, 1,016 ft. W, 200 ft. S, NE cor. NW, Sec. 19-16-6 ..... Derrick.

Southern Carbon Co.'s No. 2 Mulhern, Sec. 19-16-6 ..... Derrick.

United Carbon Co.'s No. 1 W. M. Hallock, 1,980 ft. N, 660 ft. W, SE cor., Sec. 2-16-6 ..... Cmtd. 8-in. 770 ft.

United Carbon Co.'s No. 2 Mulhein, 660 ft. S, 750 ft. E, NW cor. NW, Sec. 30-16-6 ..... Derrick.

**SABINE PARISH—PLEASANT HILL**

F. A. Bartlett, Jr.'s No. 1 Logan, 200 ft. S, 200 ft. E, NW cor., Sec. 27-10-12 ..... Rig up.

**SABINE PARISH—ZWOLLE**

Ark. Fuel Oil Co.'s No. 1 Nunn, 330 ft. N, 330 ft. E, C, Sec. 32-8-12 ..... Tested dry 2,500 ft.; drlg. through lime.

Air Lift Oil Co. and Root Refineries, Inc.'s No. 1 Leone, 150 ft. S, 150 ft. W, NE cor. S½ SE SW, Sec. 32-8-12 ..... Cmtd. 6⅝-in. 2,230 ft.

Bahan & Ryan's No. 1 Mischel, 1,215 ft. N, 1,169 ft. W, SE cor. SW, Sec. 32-8-12 ..... Rig up.

Loring Oil Co.'s No. 2 Bowman-Hicks, 200 ft. S, 200 ft. W, NE cor. NE NW, Sec. 3-7-12 ..... Bailing 25 bbls. oil 2,725 ft.

Loring Oil Co.'s (formerly Benedum & Trees Oil Co.'s) No. 3 Bowman-Hicks, 330 ft. S, 330 ft. W, NE cor. SE, Sec. 34-8-12 ..... Bailing 75 bbls. oil; T.D. 2,363 ft.

Loring Oil Co.'s (formerly Benedum & Trees Oil Co.'s) No. 4 Bowman-Hicks, 330 ft. N, 330 ft. W, C, Sec. 34-8-12 ..... Derrick.

Loring Oil Co.'s (formerly Benedum & Trees Oil Co.'s) No. 5 Bowman-Hicks, 900 ft. S, 1,400 ft. W, C, Sec. 34-8-12 ..... S.D. 2,675 ft.; moving in heavier rig for deep test.

Loring Oil Co.'s (formerly Benedum & Trees') No. 6 Bowman-Hicks, 330 ft. N, 330 ft. E, SW cor. SE, Sec. 33-8-12 ..... Cmtd. 6⅝-in. top chalk 2,502 ft.; waiting on cable tools; T.D. 2,512 ft.

Loring Oil Co.'s (formerly Benedum & Trees') No. 1 Sabine Lbr., 330 ft. N and E, C, Sec. 34-8-12 ..... 1,600 ft. oil in hole; bailing; T.D. 2,340 ft.

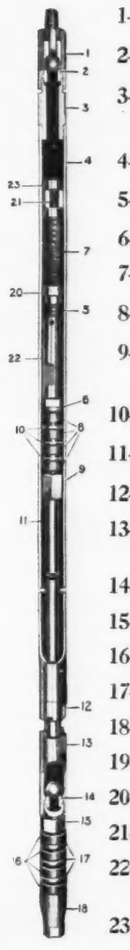
Loring Oil Co.'s (formerly Benedum & Trees') No. 7 Bowman-Hicks, 330 ft. S and W, NE cor. NW, Sec. 34-7-12 ..... Cmtd. 6⅝-in 2,550 ft.; top chalk 2,560 ft.; T.D. 2,572 ft.

Loring Oil Co.'s No. 8 Bowman-Hicks, 330 ft. S, 330 ft. E, NW cor. SW SE, Sec. 33-8-12 ..... Derrick.

G. H. Broderick's No. 1 Bolin, Sec. 31-8-12 (Zwolle Townsite) ..... Cmtd. 6⅝-in. 2,184 ft.

Broderick & Calvert's No. 1 Sabine Lbr. Co., 150 ft. N, 150 ft. W, SE cor. SE SW, Sec. 31-8-12 (Zwolle Townsite) ..... Dropped from report; same as G. H. Broderick's No. 1 Bolin.


# Sand Won't Trouble



1—Steel Upper Crown.

2—Steelex Ball and Seat.

3—Steel Upper Tube Connection or seat Frame.

4—Seamless Steel Outer Tube.

5—Steel Spring.

6—Steel Cup Nut.

7—Hydraulic Packing.

8—Vulcanized Cups.

9—4-Cup Steel Plunger Valve Body.

10—Steel Cup Rings.

11—Steel Plunger or Inner Tube.

12—Steel Lower Bushing.

13—Steel Closed Crown Tapped for Plunger Tube.

14—Steelex Ball and Seat.

15—Steel Valve Body.

16—Leather Cups.

17—Steel Cup Rings.

18—Steel Anchor Bottom.

19—Steel Reversing Ring.

20—Steel Reversible Follower.

21—Seamless Steel Tube Body.

22—Steel Valve Connection or Guide.

23—Steel Reversible Bottom.

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Tried and tested in every field. A Liner Working Barrel—that's in a class of its own in sandy conditions.

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FRANKLIN, PENNA.

## Specialized Balls and Seats

for every pumping condition

STEELEX REPELEX
BRONZEX COMBINEX

JUDGE THEM—
BY PERFORMANCE

*Cutting the Backbone of a Mountain Range*

HERE is a Schramm No. 240 Portable Compressor put to work on the deepest two-sided road cut ever made in the United States.

This difficult problem was encountered on the California State Highway project between Tunnel Station and the Santa Clara River, near Newhall, the L. & L. Construction Co., being the contractors.

The "Schramm" Compressor on the top of the mountain was used for drilling holes necessary for placing the dynamite charges.

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*Representatives in All Important Cities*

Schramm Inc. West Chester, Penna., U. S. A.

R. L. Burch's No. 1 Sabine Lbr. Co., Sec. 31-8-12 ..... Cmtd. 6⅝-in. 2,185 ft.
Joe Burnham et als' No. 1 Bolin, 200 ft. N, 408 ft. E, SW cor. SW NE, Sec. 31-8-12 ..... Small show oil 2,178 ft.; bailed dry; arranging to deepen.
J. R. Crawford's No. 1 Pearce, 408 ft. S, 200 ft. E, NW cor. SW SE, Sec. 32-8-12 ..... Rigging up.
Davis & Tyson's No. 1 Neville-Roberts, 300 ft. N, 275 ft. W, SE cor. NW SW, Sec. 31-8-12 (Zwolle Townsite) .. Arranging to cmt. 6⅝-in. 2,165 ft.; T.D. 2,173 ft.
Dixie Oil Co.'s No. 1 Nunn, 330 ft. N, 85 ft. W, C, Sec. 32-8-12 .. ..... Cored chalk showing oil 2,497 ft.; arranging to test.
Dooley & Howard's No. 1 Williams, Sec. 31-8-12 ..... Rig up.
R. T. Dudney et al's No. 1 Pearson, SE cor., Lot 3, Block 3, SW NW, Sec. 31-8-12, Zwolle Townsite..... Rig up.
Glassell & Merren's No. 1 Thomas, Lot 13, Blk. 3, (Zwolle Townsite), Sec. 31-8-12 ..... Cmtd. 6⅝-in. on top chalk 2,202 ft; drlg. plug; S.O; loat seat.
W. G. Gray, trustee's No. 1 Knowlton, 200 ft. S, 330 ft. W, NE cor. NW NE, Sec. 6-7-12 ..... Drlg. with cable tools in chalk at 2,340 ft.
G. A. Henshaw et als' No. 1-A Sabine Lbr. Co., 200 ft. N, 760 ft. E, SW cor. SE NE, Sec. 31-8-12 ..... Cmtd. 6⅝-in. 2,177 ft.
G. A. Henshaw et als' No. 3-A Sabine Lbr. Co., 766 ft. N, 200 ft. E, SW cor. SE NE, Sec. 31-8-12 ..... Location.
G. A. Henshaw et als' No. 1-B Sabine Lbr. Co., 150 ft. S and E, C, Sec. 31-8-12 ..... Drlg. cable tools 2,330 ft.
C. L. Jett, trustee's No. 1 Jones, 150 ft. C, Sec. 31-8-12.. Drlg. 810 ft.
Herbert Oil Co.'s No. 1 Noble, 750 ft. S, 1,250 ft. E, NW cor. SW, Sec. 31-8-12 ..... Derrick.
F. M. Hood's No. 1 Winston, 460 ft. S, 290 ft. E, NW cor., Sec. 31-8-12 ..... Began drlg. Mar. 28; cmtd. 10-in. 107 ft.; drlg. 700 ft.
W. F. Lacey et als' No. 1 Knouse, Sec. 36-8-12 ..... Bailed dry 2,120 and 2,200 ft.; drlg. 2,250 ft.
R. T. Burch's (formerly Lloyd Oil Corp.'s) No. 1 Barnett, Sec. 31-8-12 (Zwolle Townsite) ..... Cmtd. 6⅝-in. 2,185 ft. drlg. in with cable tools.
O'Brien Bros.' No. 1 Colquitt, 330 ft. S and E, NW cor. SW, Sec. 32-8-12 ..... Drlg. 2,535 ft.; T.A. 2,575 ft.
Ohio Oil Co.'s No. 3 Bowman-Hicks, 330 ft. S and W, NE cor. SE SW, Sec. 33-8-12 ..... Dry 2,542 and 2,572 ft.; drlg. 2,610 ft.
Ohio Oil Co.'s No. 4 Bowman-Hicks, 330 ft. N and E, SW cor. NW SW, Sec. 35-8-12 ..... Full oil; W.O.S.R; T.D. 2,372 ft.
Olsen Bros.' No. 1 Ferguson, 330 ft. N, 330 ft. E, SW cor. NW SE, Sec. 33-8-12 ..... Derrick.
Olsen Bros.' No. 1 Keeler, SW cor. SW SE, Sec. 27-8-12.. W.O.S.R.
Philp Bros.' No. 1 Dow, Lot 1, Blk. 18, Zwolle Townsite, Sec. 31-8-12 ..... Began drlg Mar. 28; cmtd. 10-in. 102 ft.; T.D. 200 ft.
Ray-Dawes Drlg. Co.'s No. 1 Mansfield Hwd. Lbr. Co., Sec. 36-8-13 ..... Slight show oil 2,202 ft.; bailed dry.
Ruston Drlg. Co.'s No. 1 Bowman-Hicks, 330 ft. S, 330 ft. W, NE cor., Sec. 4-7-12 ..... T.A. 2,640 ft.
Ruston Drlg. Co.'s No. 1-A Bowman-Hicks, 330 ft. S, 330 ft. E, NW cor. SW SW, Sec. 35-8-12 ..... Showed oil and bailed dry 2,538 ft.; drlg. 2,600 ft.
Ruston Drlg. Co.'s No. 2-A Bowman-Hicks Lbr. Co., Sec. 35-8-12 ..... Derrick.
Sabine Lbr. Co.'s No. 1 fee, 150 ft. N, 150 ft. W, C, Sec. 31-8-12 ..... Drlg. 2,160 ft.
Sabine O. & G. Co.'s No. 1 Anderson, 200 ft. N, 200 ft. E, SW cor. SW NW, Sec. 19-18-13 ..... Swabbed oil after shot; W.O.; T. D. 2,603 ft.
C. E. Simmons' No. 1 Anderson, Sec. 31-8-12 (Zwolle Townsite) ..... Rig up.
Bob Elmore's (was C. E. Simmons') No. 1 Bolin, 116 ft. E, 126 ft. N, C, Sec. 31-8-12 ..... Changing back to rotary rig; T. D. 2,160 ft.
C. E. Simmons' No. 1 Leach, 435 ft. W, 113 ft. N, SE cor. SW NW ..... Location.
W. S. Smith et als' No. 1 Colquitt (Zwolle Townsite), 500 ft. S, 480 ft. E, NW cor. SW NE, Sec. 31-8-12 .. Derrick.
W. S. Smith et als' No. 1 Henderson, 200 ft. S, 300 ft. E, NW cor. SE SE, Sec. 31-8-12 ..... Derrick.
W. S. Smith et als' No. 1 Williams (Zwolle Townsite), 804 ft. N, 40 ft. W, SE cor. SW NE, Sec. 31-8-12 .. Rig up.
Standard Oil Co.'s No. 1 L. N. Nunn, 990 ft. S, 330 ft. E, C, Sec. 32-8-12 ..... Tested dry 2,339 ft.; drlg. 2,352 ft.
Stovall Drlg. Co.'s No. 1 Lefkovitz, 247 ft. N, 250 ft. W, SE cor. N¾ SE NW, Sec. 33-8-12 ..... Bailed dry 2,694 ft. and 2,699 ft.; W.O.
A. H. Tarver's No. 1 Sabine State Bank, 250 ft. N, 250 ft. W, C, Sec. 27-8-12 ..... Bailing to test; T.D. 2,680 ft.

**SABINE PARISH—BLUE LAKE**

H. S. Autrey's No. 1 Long-Bell, 1,120 ft. S, 1,120 ft. W, NE cor., Sec. 35-8-14 ..... Began drlg. Mar. 27; cmtd. 12½-in. 80 ft.; drlg. 888 ft.
R. L. Gay's No. 7 Bowman-Hicks, Sec. 14-7-14 ..... Drlg. 1,706 ft.
R. L. Gay's No. 8 Bowman-Hicks, Sec. 18-7-13 ..... Derrick.
R. L. Gay's No. 4 Sabine Lbr. Co., Sec. 13-7-14 ..... Drlg. 1,645 ft.
Ruston Drlg. Co.'s No. 1-B Bowman-Hicks, 330 ft. S, 330 ft. E, NW cor., Sec. 24-7-14 ..... Rig up.

**UNION PARISH**

Greenwood Prod. Co.'s No. 1 Guinn, 1,980 ft. N, 660 ft. W, SE cor., Sec. 32-21-3 ..... Rig up.
W. S. Hall's No. 4 Spencer, 139 ft. N, 980 ft. W, SE cor. SW, Sec. 2-20-3 ..... Cmtd. 6-in. 2,118 ft.
Industrial Gas Co.'s No. 1-B Jenny, 660 ft. N, 660 ft. E, SW cor., Sec. 33-21-4 ..... Rig up.

**WEBSTER PARISH—SAREPTA AND SHONGALOO**

Bateman et als' No. 3 Womble, 200 ft. S, 660 ft. E, NW cor. NW SW, Sec. 1-22-11 ..... W.O.S.R.; 800 ft. fluid; T.D. 2,704 ft.
Pat Hudson's No. 1 B. L. Slack, 330 ft. W, 330 ft. N, SE cor. NW, Sec. 36-23-11 ..... 1,500 ft. fluid, 40% S.W.; W.O.S.R.; T. D. 2,741 ft.
Liggett et als' No. 1 Slack, 150 ft. N, 366 ft. W, SE cor. SW SE, Sec. 36-23-11 ..... Cmtd. 10-in. 316 ft; drlg. 730 ft.
Magnolia Pet. Co.'s No. 3 Scoggins, 165 ft. N, 230 ft. W, SE cor. SW NW, Sec. 1-22-11 ..... Began drlg. Mar. 29; cmtd. 15½-in. 303 ft.
Mt. Vernon Oil Co.'s No. 3 Pardee, 200 ft. S, 1,500 ft. E, NW cor. NE SW, Sec. 3-22-11 ..... Drlg. 900 ft.
Merritt & Merritt's No. 1 Boucher, 200 ft. N, 200 ft. E, SW cor. SE SE, Sec. 17-23-11 ..... Fishing D. S.; T.D. 2,811 ft.

**ARKANSAS**

**JOHNSON COUNTY—CLARKSVILLE**

Ark.-La. P. L. Co.'s No. 1 Patterson, 1,020 ft. S, 2,570 ft. E, NW cor., Sec. 14-10-24 ..... Drlg. 2,960 ft.

**NEVADA COUNTY**

Roy Davis et als' No. 1 Chas. Henry, 1,120 ft. N, 1,120 ft. W, SE cor., Sec. 10-12-20 ..... Rig up.
C. F. Steele's No. 1 E. W. Groves, Sec. 21-14-20 ..... S.D.

**OUACHITA COUNTY—SMACKOVER**

J. D. Reynolds' No. 3 Berg, NE cor. SE SW, Sec. 27-15-15 ..... Derrick.
J. D. Wingfield's No. 1 Martin, SW cor., Sec. 26-15-15 .. Set 6⅝-in. 2,085 ft.; tested little oil and S.W.; T.D. 2,115 ft.

**OUACHITA COUNTY—STEPHENS**

Magnolia Pet. Co.'s No. 2 Grayson, 150 ft. N, 200 ft. W, SE cor. NE, Sec. 21-15-19 ..... W.O.S.R.; 200 ft. oil, 50 ft. S.W.; T.D. 1,480 ft.

**UNION COUNTY—CHAMPAGNOLLE**

O. W. Estes' No. 1 Bates, 200 ft. N, 200 ft. E, SW cor., Sec. 13-17-14 ..... Top Nacatoch 2,127 ft; drlg. gumbo 2,432 ft.

Magnolia Pet. Co.'s No. 1 Gregory, Sec. 15-17-14 ..... Drlg. 3,260 ft.

**UNION COUNTY—EL DORADO**

H. L. Hunt's No. 6 Pratt, 150 ft. N, 330 ft. E, SW cor. NE NE, Sec. 7-18-15 ..... Running sand pump; T.D. 2,214 ft.

Malloy & Co.'s No. 4 Goodwin, 300 ft. N, 300 ft. E, SW cor. NE NE, Sec. 36-17-16 ..... Sidetracking sand pump; T.D. 2-210 ft.

Malloy & Co.'s No. 1 Murphy, Sec. 1-18-16 ..... Rig up; W.V.

Malloy & Co.'s No. 3 Robertson, NE cor. S½ SW NE, Sec. 6-18-15 ..... Location.

Rice et als' No. 1 W. Ralty, 150 ft. S, 150 ft. E, NW cor. SW, Sec. 7-17-15 ..... Spudded July 18; cmtd. 10-in. at 92 ft.

Welsinger & Ball's No. 1 Rogers, 1,014 ft. N, 150 ft. E. SW cor. E½ SW SE, Sec. 31-17-15 ..... Cmtd. 6⅝-in. 2,175 ft.

**UNION COUNTY—SMACKOVER**

E. L. Chapman's No. 1 Epps, 330 ft. S, 330 ft. W, NE cor. SE NE, Lot 7, Sec. 3-16-16 ..... 500 ft. fluid; W.O.S.R.; T.D. 2,028 ft.

**EAST TEXAS**

**HARRISON COUNTY**

Shell Rock Pet. Co.'s No. 1 Oliver Dougherty, W. D. Burris Sur. ..... Drlg. 1,800 ft.

**PANOLA COUNTY**

Ark.La. P. L. Co.'s No. 12 Werner, 1,102 ft. N, 132 ft. E, SW cor. 15-ac. tract in E. F. Mitcheson Sur. ..... Location.

Calatex O. & G. Co.'s No. 3 Caldwell, 243 ft. S, 1,034 ft. W, SE cor. Jno. Womack Sur., in Jas. Shadoin Sur. .. S.D.; W.O. 1,072 ft.

Magnolia Pet. Co.'s No. 6 G. C. Tiller, 393 ft. S, 1,990 ft. E, NW cor. Jane Thorpe Sur. ..... Bailing csg. 2,380 ft; old T.D. 3,-425 ft.

Nat. Gas Prod. Co.'s No. 3 Roquemore, B. C. Jordan Sur. Drlg. 4,500 ft.

Doris Thomason's No. 6 Trosper, 4,350 ft. N, 2,000 ft. W, SE cor., Jane Thorpe Sur. ..... Began drlg. Mar. 31; drlg. 100 ft.

## WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

(Continued from Page 63)

**CATAHOULA PARISH**

Luchnager Pet. Co.'s No. 1 Taliaferro, 572 ft. E, 396 ft. S. C, Sec. 26-9-6 ..... S.D. 900 ft.

**CLAIBORNE PARISH**

El Dorado Chief Oil Co.'s No. 1 Dance, C SW NE, Sec. 27-20-7 ..... S.D. 2,240 ft.

Lene Oil Co.'s No. 1 Taylor, 1,153 ft. S, 360 ft. W, C, Sec. 16-22-6 ..... Began drlg. Mar. 20; cmtd. 12½-in. 200 ft.; drlg. gummy shale 2,300 ft.

**CONCORDIA PARISH**

Joe Man et al's No. 1 Maxwell, C, Sec. 35-3n-8e ..... Claim oil sand 1,692 ft.; W.O.

**DE SOTO PARISH**

Benson Oil Co.'s No. 1 Harris, Sec. 6-10-13 ..... Tested dry; show gas; W.O. 3,-650 ft.

Loring Oil Co.'s No. 1 Johnson, 300 ft. S, 300 ft. W, NE cor., Sec. 7-11-13 ..... Coring 2,906 ft.

R. O. Roy's No. 1 Nelson, 660 ft. S, 660 ft. E, NW cor., Sec. 36-15-13 ..... Derrick.

**FRANKLIN PARISH**

Davis et al's No. 1 Moore, 600 ft. W, 200 ft. S, NE cor., Sec. 12-11-6 ..... S.D. 1,430 ft.

Evansville Inv. Co.'s No. 1 W. B. Welch, 945 ft. E, 511 ft. N, SW cor., Sec. 2-14-8 ..... Drlg. shale (Midway) 3,620 ft.

Franklin O. & G. Co.'s No. 1 T. J. O'Brien, 300 ft. N, 300 ft. E, SW cor. NW, Sec. 17-15-9 ..... Drlg. sand and gumbo (Wilcox) 2,727 ft.

**NATCHITOCHES PARISH**

S. D. McDaniel's No. 2 Clark & Morse, 800 ft. E, 350 ft. N, C, Sec. 23-5-6 ..... Tested 1,000,000 ft. gas and S.W. 3 ft.; S.D. for orders; T.D. 2,-526 ft.

Robeline O. & G. Co.'s No. 1 Winn, 558 ft. N, 348 ft. E, SW cor. SE, Sec. 7-8-9 ..... S.D. 1,600 ft.

**OUACHITA PARISH**

J. L. Bullock, trustee's No. 1 W. Va. Lubr. Co., N½ NE, Sec. 25-18-5 ..... S.D. account of high wtr.; T.D. 2,700 ft.

**RAPIDES PARISH**

Ayers Bros.' No. 1 Wickliff, 2,790 ft. N, 150 ft. E, SW cor., Sec. 9-5n-2e ..... S.D. for fuel 2,650 ft.

**RED RIVER PARISH**

W. D. Ball's No. 1 Krumholtz, 660 ft. S, 660 ft. E, NW cor., Sec. 32-14-10 ..... D.S. test 1,700 ft.; dry; W.O.

**RICHLAND PARISH**

Austin & McDonald's No. 1 Hunt, 594 ft. N, 660 ft. E, SW cor., Sec. 13-17-5 ..... Derrick.

Austin & McDonald's No. 2 Millsaps, SW cor., Sec. 17-17-6 ..... Waiting orders; T.D. 2,657 ft.

Austin & McDonald's No. 3 Millsaps, 1,980 ft. S, 660 ft. E, NW cor., Sec. 16-17-6 ..... Tested S.W.; W.O. 2,477 ft.

Austin & McDonald's No. 4 Millsaps, NW cor., Sec. 16-17-6 ..... Location.

Austin & McDonald's No. 5 Millsaps, 2,640 ft. N, 1,320 ft. W, SE cor., Sec. 8-17-6 ..... Derrick.

W. C. Feazel's No. 1 Landrum, 620 ft. N, 4,573 ft. E, SW cor., Sec. 6-16-7 ..... Derrick.

Richland O. & G. Co.'s No. 1 Singleterry, 1,320 ft. N, 660 ft. W, SE cor., Sec. 20-18-7 ..... S.D. 987 ft.

Shreveport Contractors, Inc.'s No. 1 Buie, 600 ft. E, 400 ft. N, SW cor., Sec. 17-15-7 ..... S.D. shale and boulders 2,597 ft.

**SABINE PARISH**

Bridges-Clark Oil Co.'s No. 1 Cook, 150 ft. S, 200 ft. W, NE cor. NW NW, Sec. 3-9-12 ..... Rigging up.

Bridges-Clark Oil Co.'s No. 1 Gay et al, 300 ft. S, 300 ft. E, NW cor. NE NW, Sec. 3-9-12 ..... Fishing one joint liner and two joints wash pipe; T.D. 3,276 ft.

Bridges-Clark Oil Co.'s No. 1 McWilliams, 330 ft. S, 330 ft. E, NW cor., Sec. 30-10-11 ..... D.S. test 3,227 ft.; dry; W.O.

R. L. Gay, trustee's No. 7 Bowman-Hicks, 330 ft. N, 330 ft. W, SE cor. NE SW, Sec. 14-7-14 ..... Rig up.

R. L. Gay, trustee's No. 8 Bowman-Hicks Lbr. Co., 330 ft. N, 330 ft. W, SE cor. NW SW, Sec. 18-7-13 ..... Derrick.

R. L. Gay, trustee's No. 4 Sabine Lbr. Co., 330 ft. N, 330 ft. E, SW cor., Sec. 13-7-14 ..... Began drlg. Mar. 24; cmtd. 10-in. 68 ft.; drlg. 338 ft.

Longoria et al's No. 1 Belton, 330 ft. S, 330 ft. E, C NE, Sec. 31-9-13 ..... Derrick.

Loring Oil Co.'s No. 1 Peavy-Wilson Lbr. Co., 200 ft. S. 330 ft. W, NE cor. SW NE, Sec. 21-6-13 ..... Derrick.

Lohman et al's No. 1 Wyatt Lbr. Co., 150 ft. S, 330 ft. E, NW cor. NE SW, Sec. 18-4-11 ..... Derrick.

J. C. McDaniel's No. 1 Darby, SE cor., Sec. 16-8-12 ... Derrick.

Ohio Oil Co.'s No. 1, Acct. 2, Bowman-Hicks, 275 ft. N, 330 ft. W, SE cor. NE SE, Sec. 6-7-13 ..... Derrick.

Paramount O. & G. Co.'s No. 1 Woolems, 330 ft. N, 330 ft. W, SE cor. NE NW, Sec. 11-6-12 ..... Drlg. 820 ft.

Pelican O. & G. Co.'s No. 1 La. Long Leaf Lbr. Co., 215 ft. N, 30 ft. E, SW cor. NW SE, Sec. 4-7-11 ..... D.S. test; show oil 1,200 ft.; dry; drlg. 1,730 ft.


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We finance natural gas producing and distributing companies. We have underwritten, as principals, issues for the following natural gas companies:

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## for deep tests or wildcats

**Sullivan "60" is the new Diamond Drill for deep tests and wildcat drilling. It will drill large holes as well as small ones, rapidly—and take core wherever desired.**

***Makes Big Hole—Sets Big Casing***

**Sullivan "60" will make open hole to 6000 feet, or set 5500 feet of 3-in. casing, 5000 of 4¾-in., 4000 of 6⅝-in., 2500 of 8⅝-in. or 1000 of 11¾-in.**

***Straight True Holes***

**Hydraulic 18-in. feed, and three drilling speeds, give you sensitive control of the bit. And you can be sure of drilling straight true holes.**

***Uses any equipment used by Rotary***

**In addition to the diamond bit, Sullivan "60" uses any equipment used by the rotary drill, including a Kelly.**

***Handles Highest Pressures***

**Sullivan "60" will complete holes against the highest gas pressures yet encountered. Separate hoist and pumping outfit are supplied.**

**Sullivan "60" with equipment for deep holes, is much lighter than other equipment—and saves freight and transportation.**

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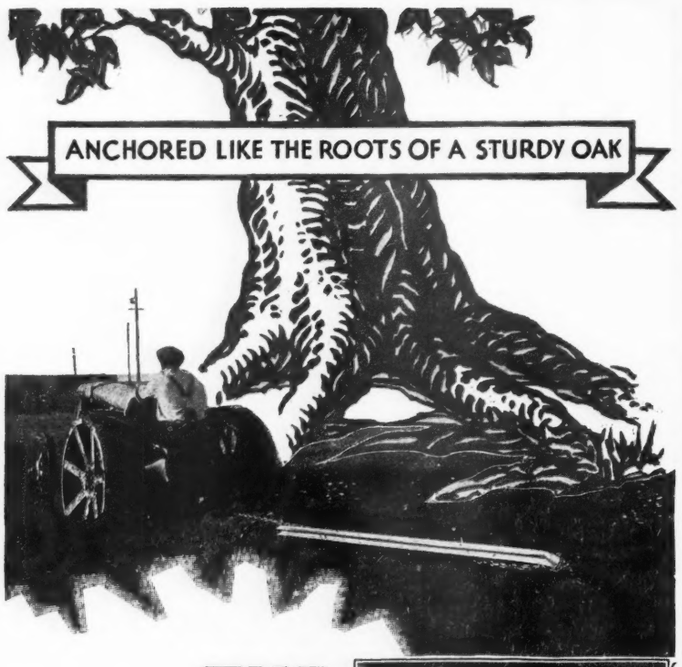


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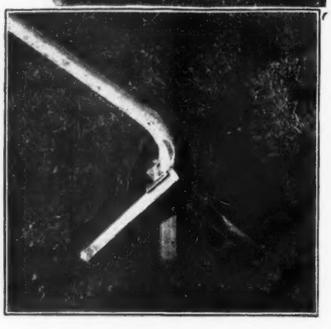

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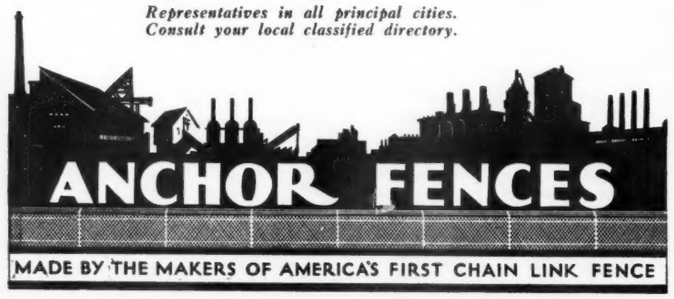


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Pelican O. & G. Co.'s No. 1 Sabine Lbr. Co., 330 ft. S, 330 ft. E, NW cor. NE SW, Sec. 1-7-12 ..... Cmtd. 6⅝-in. 2,288 ft.; T.D. 2,301 ft.

W. F. Lacey et al's No. 1 Knouse, 60 ft. N, 111 ft. W, SE cor. NE SE, Sec. 36-8-13 ..... Rig up.

D. H. Riddick's No. 1 Scretchfield, 400 ft. E, 400 ft. N, SW cor. NW SE, Sec. 18-9-12 ..... Drlg. 2,580 ft.

A. H. Tarver's No. 2 Long Bell, 800 ft. N, 800 ft. W, SE cor. SW, Sec. 18-8-13 ..... D.S. test 3,375-3,418 ft.; 2 joints mud; S.D.; W.O.

**TENSAS PARISH**

A. R. Willis et al's No. 1 Currey, 1,320 ft. S, 1,320 ft. E, NW cor., Sec. 39-11-12 ..... S.D. 600 ft.

**UNION PARISH**

Bahan & Bahan's No. 1 J. West, 660 ft. N, 660 ft. E, SW cor., SE, Sec. 33-23-3 ..... D.S. test 2,500 ft.; dry and S.D.; W.D.

Fred Stovall's No. 1 Stovall, 1,820 ft. E, 350 ft. N, SW cor., Sec. 32-23-4 ..... Rig up.

**WEBSTER PARISH**

J. J. Kean's No. 1 Monzingo (was F. M. Fuller's), 200 ft. N, 200 ft. W, SE cor., Sec. 17-18-8 ..... Drlg. 850 ft.

**WEST CARROLL PARISH**

H. L. Hunt, Inc.'s No. 1 R. E. Brown, NW cor. NW SW, Sec. 4-21-11 ..... Cmtd. cavity; drlg. 1,016 ft.; old T.D. 1,595 ft.

Palmer Corp.'s No. 1-A Marston, 1,320 ft. S, 89° 35' W, 1,320 ft. of SE cor., Sec. 11-19-10 ..... Cored sandy shale 2,688 ft.

**ARKANSAS**

**ASHLEY COUNTY**

J. D. Marcum Co.'s No. 1 McGarry, 300 ft. W, 100 ft. S, C, Sec. 10-19-4 ..... O.W.D.D.; arranging to deepen; T.D. 3,300 ft.

**CLEBURNE COUNTY**

Cosden Oil Co. of Ark.'s No. 1 Donophan, 100 ft. S, 660 ft. E, NW cor. SW SE, Sec. 19-9-10 ..... Drlg. 2,590 ft.

Donnelly-Craver et al's No. 1 Doniphan Lbr. Co., SE cor. NW, Sec. 33-11-9 ..... Drlg. 205 ft.

**COLUMBIA COUNTY**

Parker et al's No. 1 Franks, 330 ft. S, 330 ft. W, C, Sec. 25-19-22 ..... S.D. 2,835 ft.

**DREW COUNTY**

McClintock & Goodka's No. 1 Ogles, 920 ft. W, 400 ft. S, NE cor., Sec. 35-13-5 ..... Drlg. 2,420 ft.

**FAULKNER COUNTY**

Gold Creek O. & G. Co.'s No. 2 Stermer, SE cor. NW SE, Sec. 17-4-13 ..... Began drlg. Dec. 12.

**GARLAND COUNTY**

Givens et al's No. 1 Garrett, 660 ft. S, 660 ft. W, C, Sec. 1-3-19 ..... S.D.; W.O. 3,604 ft.

**LITTLE RIVER COUNTY**

A. L. Buck's No. 1 Greason, NW NW, Sec. 25-12-32 ..... S.D. 2,335 ft.

McDonald & Shaw's No. 1 W. E. Black, 240 ft. N, 450 ft. W, SE cor. SE NE, Sec. 12-13-28 ..... Coring 2,060 ft.

**LOGAN COUNTY**

M. W. Greeson's No. 1 C. S. Parke, 330 ft. N, 330 ft. W, SE cor., Sec. 21-8-24 ..... Cmtd. 6-in. 950 ft.; drlg. broken shale 1,825 ft.

**MADISON COUNTY**

Phillips Pet. Co. and F. S. Craver's No. 1, C, Sec. 11-14-28 ..... Tested 250,000 ft. gas 63 ft.; drlg. 1,461 ft.

**OUACHITA COUNTY**

Anderson & Wimmer's No. 1 Buck, Sec. 7-15-17 ..... Reported junked and abd; C.O. T.D. 2,727 ft.

Artex Oil Co.'s No. 1 M. V. Smith, 330 ft. S, 330 ft. E, NW cor. SE NW, Sec. 31-15-17 ..... S.W. 3,077 ft.; drlg. 3,166 ft.; T.A. 3,188 ft.

**PIKE COUNTY**

Theo. Davis, trustee's No. 1 Ruth Wilson, 200 ft. S, 200 ft. W, NE cor., Sec. 25-5-26 ..... Fishing 700 ft.; C.D.

**POPE COUNTY**

Cosden Oil Co.'s No. 1 Mo. Pac. R.R., 660 ft. N, 660 ft. E, SW cor. NW SE, Sec. 13-9-19 ..... Fishing for bit; T.D. 3,435 ft.

**PRAIRIE COUNTY**

Transcontinental Oil Co.'s No. 1 Louis Novak, 330 ft. E, 330 ft. N, SW cor. SW NE, Sec. 36-2n-6 ..... Reaming to bottom 2,930 ft.

**ST. FRANCIS COUNTY**

Brownlee Drlg. Co.'s No. 1 Whitted, 110 ft. N, 110 ft. E, SW cor. SE NW, Sec. 28-4-1 ..... S.D.; funds; 300 ft.

**UNION COUNTY**

Al-Cal Oil Corp.'s No. 1 Harvey, 660 ft. W, 300 ft. S, NE cor. SW SE, Sec. 1-17-16 ..... S.D.; W.O. 2,770 ft.

E. L. Chapman's No. 1 School, Sec. 9-18-13 ..... Location.

W. M. Coates, trustee's No. 1 McDuffie, Sec. 32-19-17 ..... T.A. in red beds; T.D. 4,500 ft.

Federal Pet. Co. and Union Sawmill Co.'s No. 1 Fee, 330 ft. N, 330 ft. W, SE cor. NW NE, Sec. 9-18-13 ..... Derrick.

H. L. Hunt's No. 1 Norris (formerly reported Ark. Drlg. Co.'s No. 1 Norris), Sec. 17-18-12 ..... Coring 3,405 ft.

Lion Oil Ref. Co.'s No. 1 Ballard, 330 ft. N, 330 ft. W, SE cor. SW NW, Sec. 10-18-13 ..... S.D.; repairing rig; T.D. 3,825 ft.

Marine Oil Co.'s No. 1 Simmons, 200 ft. N, 200 ft. W, SE cor. SE NW, Sec. 10-18-13 ..... Cmtd. 8¼-in. 3,520 ft.; W.O.S.R. 2,532 ft.

Marine Oil Co.'s No. 2 Simmons, 300 ft. N, 300 ft. E, SW cor. SE NW, Sec. 10-18-13 ..... Rig up.

Marine Oil Co.'s No. 2-B Winn, 200 ft. S, 200 ft. E, NW cor. NW SE, Sec. 10-18-13 ..... Cmtd. 8¼-in. 3,528 ft.; S.D. 3,531-34 ft.; W.O.

Modisette Drlg. Co.'s No. 3 Union Sawmill, 330 ft. S, 330 ft. W, NE cor., Sec. 14-18-14 ..... Cmtd. 6⅝-in. 2,238 ft.; bailing to test.

Johnson Drlg. Co.'s No. 1 Tate, 300 ft. N and W, SE cor. NE NW, Sec. 14-18-14 ..... 650 ft. fluid in hole; broken sand 3,216-30 ft; W.O.S.R.

Johnson-Gummer Co.'s No. 1 Cargile, Sec. 4-18-15 ..... Coring 3,695 ft.

Simms Oil Co.'s No. 1 G. D. Simmons, 200 ft. S, 200 ft. W, NE cor. SW, Sec. 10-18-13 ..... Began drlg. Mar. 23; drlg. 1,6[illegible] ft.

**VAN BUREN COUNTY**

Glenn Cole et al. trustee's No. 1 Scanlan, 200 ft. S, 200 ft. W, NE cor. SE NW, Sec. 5-19-13 ..... S.D. 50 ft.

**WASHINGTON COUNTY**

Delbert & Graves' No. 1 Cunningham, Sec. 14-15-32 ..... S.D.; W.O. 602 ft.

C. H. Willoughby's No. 1 Jones, Sec. 34-16-30 ..... Trying to kill wtr. flow 2,150 ft.; hard sand showing oil 1,637-[illegible] ft.

Lincoln Leaseholding Synd.'s No. 1 Lincoln, Sec. 30-15-32 ..... U.R. 8-in. to T.D. 1,500 ft.

**WHITE COUNTY**

Letona Synd.'s No. 1 Letona, SE cor. NW SW, Sec. 35-9-8 ..... Cmtd. 5 3/16-in. 2,500 ft.; drlg. 3,605 ft.

**EAST TEXAS**

**CAMP COUNTY**

Rogers et al's No. 1 Enfelt, R. M. Montgomery Sur. ..... Tested dry 1,870 ft; S.D. 1,920 ft.

**MARION COUNTY**

R. E. Davidson's No. 1 Susie Chapman, Jackson-Grayson Sur. ..... Drlg. shale 2,475 ft.

P. E. Hussey's No. 1 A. A. Trammell, Chas. Lockhart Sur. ..... Derrick pattern.

**RED RIVER COUNTY**

D. M. Buffington's No. 1 Hossler, E. Hughhart Sur. ..... S.D. 2,365 ft.

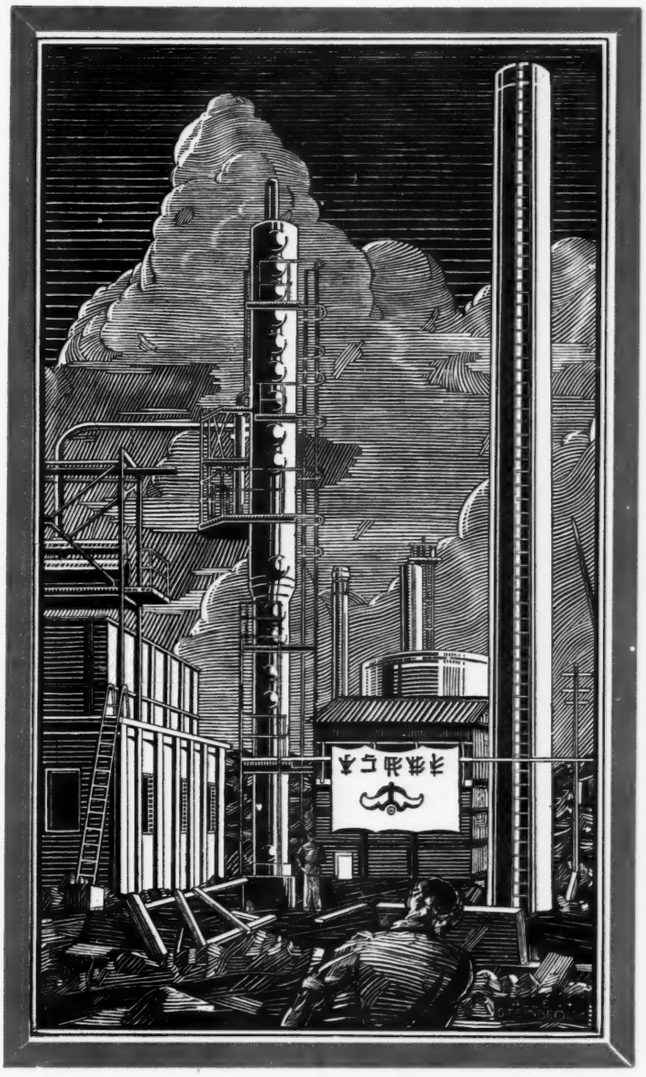
Shad Harper's No. 1 W. R. Garland, J. Wagley Sur. ..... S.D. 1,862 ft.

Johnson Pet. Co.'s No. 2 Randolph, Edward Dean Sur. ..... S.D. 2,182 ft.

**SHELBY COUNTY**

Loring Oil Co.'s (formerly Benedum & Trees Oil Co.'s) No. 1 McCann, D. G. Green Sur. ..... Drlg. 3,325 ft.

Chapperall Oil Co.'s No. 2 Holt, Matthew Moore Sur. ..... S.D. for orders 3,004 ft.



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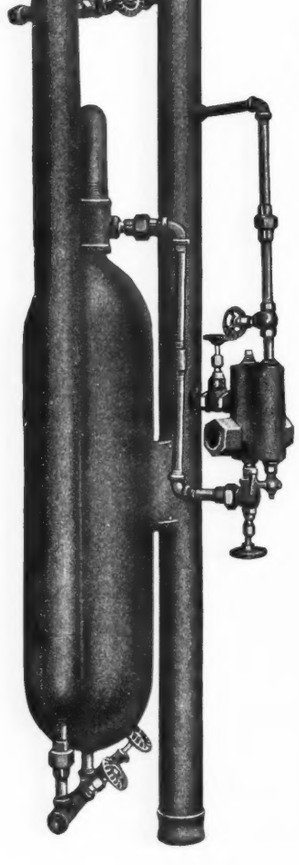

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Murphy & Graham, Seminole, Okla.
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Fain-McGaha, Wichita Falls, Texas
Alleson & Clevinger, Seminole, Okla.
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Herndon Drilling Co., Seminole, Okla.
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## BADGETT STEAM LUBRICATOR COMPANY

**CHICKASHA, OKLAHOMA**


**MISSISSIPPI**

**ALCORN COUNTY**

Alcorn Pet. Co.'s No. 1 Matthews, SE cor., Sec. 14-2s-7e..Shot with 100 qts. and reset 6-in. 2,393 ft.

**CHICKASAW COUNTY**

Hightower & Golson's No. 1 Flemming, NE cor., Sec. 20-13-3 ..... Driving 8¼-in. through quicksand; T.D. 1,280 ft.

**HINDS COUNTY**

Oscar Brown's No. 1 Riverside (formerly Hennessee et al's), SE cor. SE SW, Sec. 23-16-5 ..... Set 12½-in. 30 ft.; S.D. 1,050 ft.
Jackson O. & G. Co.'s No. 1 Taylor, C, Sec. 35-6-1e..... Derrick.
Jackson O. & G. Co.'s No. 1 Mayes, Sec. 2-5-1e ..... Estimated 2,000,000 ft. gas 2,000 bbls. wtr.; T.A., T.D. 2,480 ft.
La. G. & F. Co.'s No. 1 Hanis, Sec. 35-6-1e ..... Began drlg. Mar. 15; cmtd. 12½-in. 93 ft.
Love O. & G. Co.'s No. 1 Mendoza, Sec. 11-5-1e ..... Derrick.
Jackson O. & G. Co.'s No. 1 Taylor, C, Section 35-6-1e... Derrick.
Mrs. Reeder et al's No. 1 State, SE cor. NW NW, Sec. 25-6-1e ..... W.O.; T.D. 2,905 ft.

**HUMPHREYS COUNTY**

E. C. Steele et al's No. 1 C. B. Box, SE cor. SE NE, Sec. 25-14-4w ..... Set 12½-in. 60 ft.; S.D.

**LAUDERDALE COUNTY**

Lauderdale O. & G. Co.'s No. 1 Lackey, 990 ft. S and E, NW cor. NE, Sec. 2-7-16 ..... Set 8¼-in. 2,792 ft.; T.D. 2,816 ft.; sand 2,809-14 ft; W.O.
Meridian O. & G. Co.'s No. 1 Hauser, Sec. 33-8-18 ..... S.D.; green sand 2,693 ft.
J. R. Smith Oil Co.'s No. 1 C. F. Craig, Sec. 2-16-14.... Derrick.

**LAFAYETTE COUNTY**

Banks-Goode et al's No. 1 May, 113½ rods S, 26 rods E, NW cor. SW, Sec. 22-10-1w ..... Derrick.

**LINCOLN COUNTY**

Lincoln O. & G. Co.'s No. 1 Pat Case, NE NE, Sec. 21-8-6 ..... S.D.; W.O. 2,221 ft.

**MONROE COUNTY**

Amory Dev. Co.'s No. 1 Bourland, Sec. 2-13-19 ..... S.D. 2,912 ft.; bailer lost in hole.
Amory Pet. Co.'s No. 1 Hall, Sec. 8-13-19 ..... Drlg. 2,362 ft.; showing small amount gas; 6-in. 2,314 ft.
Park Bowser et al's No. 1 Cowart, second hole, Sec. 2-12-19 ..... S.D. 30 ft.

**RANKIN COUNTY**

Gulf Ref. Co.'s No. 1 Rainey, NW NW, Sec. 13-5-1e .... D.S. test 2,510-15 ft.; oil and S. W.; reaming; to set 9-in. 2,500 ft.
R. A. More et als' No. 1 Interior Lbr. Co., Sec. 28-6-1e S.D. repairs 400 ft.

**WARREN COUNTY**

El Dorado Oil Co.'s No. 1 Dornbush, Sec. 8-18-15 ..... S.D. 2,475 ft.; 2,350 ft. D.S. in hole; W.O.

**YALOBUSHA COUNTY**

Carter Oil Co. and J. D. Collett's No. 1 Blackmur, 330 ft. S, 990 ft. W, Sec. 14-11-4 ..... Fishing drill stem; T.D. 2,432 ft.

**YAZOO COUNTY**

Amerada Pet. Corp.'s No. 1 Doherty, SW SW, Sec. 24-12-2 ..... Drlg. sandy lime 5,183 ft.

**ALABAMA**

**LAMAR COUNTY**

Briggs & Knapp's No. 1 Wefel, Sec. 25-12-14 ..... T.A. 1,740 ft.

**LAUDERDALE COUNTY**

A. D. Morton et als' No. 10 O'Neal est., Sec. 8-2s-13w Rigging up cable tools.

**MARION COUNTY**

Hobson et als' No. 1 John Clark, SE, Sec. 29-11-14 .... Derrick pattern.

**WASHINGTON COUNTY**

S. A. Hobson's No. 1 Hobson Bros., Sec. 9-8-2 ..... S.D.; S.W. flow at 1,450 ft.
S. A. Hobson's No. 1 Wilson, Sec. 27-7-1 ..... Fishing bailer; T.D. 881 ft.
Oscar Brown's No. 2 Land & Cotton Co., Sec. 25-3-2w ... Drlg. 700 ft.

## U. S. WON LAWSUIT; LOST OIL, SINCLAIR SAYS

H. F. Sinclair has written a letter to the New York Times in which he says:

"There is widespread popular impression to the effect that by the cancellation of the Teapot Dome lease the government saved a great deal of money. The cancellation of that lease cost the government untold millions of dollars, for, due to drainage by the neighboring Salt Creek wells, there is very little recoverable oil left today in Teapot Dome, in the opinion of practical operators. As a naval reserve of oil available in emergencies, Teapot Dome has lost its usefulness.

"The Argo Oil Co., owning seven of the eight wells now operating in the Salt Creek district along the border line of the Teapot Dome Naval Reserve, has filed reports for the production of those wells with the office of the Geological Survey in Casper, Wyo. These reports show that their wells are producing an amount greatly exceeding their production previous to the shutting in of the wells drilled by the Mammoth Oil Co. within the area of Teapot Dome.

"The increase for the last five months of 1929, as compared with the last five months of 1928, is shown by the following table (from the Casper, (Wyo.) Inland Oil Index of January 17):

| | 1928 Barrels | 1929 Barrels |
|---|---|---|
| August | 1,135 | 2,900 |
| September | 1,470 | *1,360 |
| October | 1,625 | 3,325 |
| November | 1,299 | 3,266 |
| December | 1,469 | 3,079 |

*Part of wells off production due to cleaning out.

"While the production in the wells adjoining Teapot Dome are showing this increase, the wells in the northern part of the Salt Creek district furthest from Teapot Dome are declining in productivity. The unescapable conclusion is that the increased gas pressure and consequent increased oil productivity in the wells along the line come from Teapot Dome. The loss in productivity of wells further north is less than the decline would be except for the gas pressure from Teapot Dome.

"It will be recalled that at the time of the Teapot Dome contract, government experts estimated that there were about 135,000,000 bbls. of oil in Teapot Dome. Secretary of the Navy Adams, in his annual report for the year 1929, estimates that at present there are in Teapot Dome in the neighborhood of 16,500,000 bbls., a reduction of nearly 120,000,000 bbls. Due to various causes, the available oil, whatever it may be, is declining each year.

"Admiral Robison, Chief of the Engineering Department, personal representative of Secretary Denby, testified that the experience in the California reserves had cost the government millions of dollars through the drainage of oil from naval oil reserves by private operators on adjoining lands. In explaining his reasons for considering Teapot Dome lease not only advantageous but indispensable—if the oil was to be saved—he said that he did not want to see the California experience repeated. That, he said, had cost the government many millions of dollars.

"The government's special prosecutors won their lawsuit, but the nation is losing its oil."

## ARGENTINE PRODUCTION DOWN

WASHINGTON, D. C., Apr. 7.—Crude oil production in the Argentine showed a decrease in 1929 below production of 1928, this being caused by a decline in the Comodora Rivadavia zone. This decrease in production was accompanied by an increase in imports of crude oil for refining so that while the imports for the first nine months of 1928 amounted to 206,801,767 kilos it was increased over 50 per cent or to 352,899,123 kilos in the first nine months of 1929 during which period there was also an increase in refining.

# GULF LED ALL IN PRODUCTION IN TEXAS AND PRAIRIE IN OKLAHOMA

By James McIntyre

The Prairie Oil & Gas Co. had the largest net production of crude oil in 1929 in the State of Oklahoma, according to the reports submitted to the state auditor for taxation purposes. The company's net production was given as 17,056,003 bbls. Next to the Prairie was the Magnolia Petroleum Corp., which ranked first in 1928. The Magnolia company's production last year was 15,443,435 bbls.

The Sinclair Oil & Gas Co., which ranked fifth in 1927 and fifth in 1928, was third last year with 15,050,142 bbls. The production of the Prairie and Sinclair companies last year was the largest either company has ever had in Oklahoma in any year. The Carter Oil Co., which ranked first in 1927 and fourth in 1928, was fifth in 1929 with 10,943,477 bbls. The Carter Oil Co. produced 10,969,551 bbls. in 1927.

The Gypsy Oil Co., always among the leaders, ranked fourth in 1927, second in 1928 and fourth in 1929 with 14,429,541 bbls. The Pure Oil Co. ranked sixth last year with a production of 8,540,995 bbls. The Shell Petroleum Corp. produced 7,043,952 bbls. last year, and the Royal Dutch-Shell organization, through the combined production of the Shell Petroleum Corp., the Wolverine Oil Co. and its half interest in the Comar Oil Co., was credited with 8,993,230 bbls., as against 7,547,478 bbls. in 1928.

Compared with its production in 1928, the Prairie Oil & Gas Co. last year showed an increase of 3,769,539 bbls., the Magnolia Petroleum Co. a decline of 242,514 bbls, Carter Oil Co. a decline of 1,721,622 bbls., the Gypsy Oil Co. an increase of 142,685 bbls., Pure Oil Co. an increase of 1,616,992 bbls., the Sinclair Oil & Gas Co. an increase of 3,524,943 bbls., The Texas Company a decline of 1,801,359 bbls., the Mid-Continent Petroleum Corp. an increase of 324,887 bbls., the Indian Territory Illuminating Oil Co. an increase of 111,734 bbls.

Fifty-nine oil companies last year produced 169,042,496 bbls. in Oklahoma and 1,350 or more other companies and individuals produced 83,186,978 bbls. The net production of 59 major producers was about 67 per cent of all the production. In 1928, 52 companies, each with an average production of more than 1,000 bbls. per day for the year, produced 160,461,356 bbls. net, or 64 per cent of the total gross of 247,500,841 bbls.

### Gulf Led in Texas

The Gulf Production Co. again led all operators in production in Texas in 1929. The Gulf was the leading company in 1928 and in 1927. It produced 30,234,151 bbls. last year, its nearest competitor being the Humble Oil & Refining Co., with a gross production of 26,242,488 bbls. In three years the Gulf Production Co. produced 78,662,705 bbls., an average of 71,838 bbls. per day for the whole period, and the Humble Oil & Refining Co. a total of 52,658,019 bbls., an average of 48,084 bbls. per day for the three years.

Noteworthy increases in the production of a number of large Texas companies occurred in 1929 as compared with 1928, principal among them being the Humble Oil & Refining Co. with an increase of 10,950,009 bbls.; Gulf Production Co., 4,778,121 bbls.; The Texas Company, 3,133,174 bbls.; Transcontinental Oil Co., 4,888,958 bbls.; Mid-Kansas Oil & Gas Co., 5,337,691 bbls.; California Co., 2,001,439 bbls.; Southern Crude Oil Co., 5,861,550 bbls.; Phillips Petroleum Corp., 2,148,362 bbls.; Continental Oil Co., 3,238,926 bbls. Decreases in production were noted among the following large producers: Yount Lee Oil Co., 1,763,723 bbls.; Magnolia Petroleum Co., 1,799,746 bbls.; Big Lake Oil Co., 1,030,275 bbls.; Atlantic Oil Producing Co., 4,560,990 bbls.; Pure Oil Co., 2,300,970 bbls.; Shell Petroleum Corp., 1,050,139 bbls.

Seventy-three companies in 1929 produced 255,826,266 bbls., and 1,220 or more others produced 42,887,428 bbls. out of the total of 298,713,694 bbls. The big companies (those that averaged 1,000 bbls. a day or more in all or a part of the year) were responsible for 86 per cent of the gross production and their net production was about 75 per cent of the total gross production of the State.

The Shell Petroleum Corp., the largest in Texas of the foreign owned companies, produced a gross of 3,489,579 bbls. in 1927, 13,452,466 bbls. in 1928 and 12,402,337 bbls. in 1929.

**PRODUCTION OF LEADING TEXAS OIL COMPANIES IN 1929**

(Companies with average gross production of 1,000 bbls. per day or over)

| Company— | First 3 months (bbls.) | Second 3 months (bbls.) | Third 3 months (bbls.) | Fourth 3 months (bbls.) | Total 12 months (bbls.) |
|---|---|---|---|---|---|
| Gulf Production Co. | 7,173,134 | 7,594,007 | 8,082,211 | 7,384,799 | 30,234,151 |
| Humble Oil & Refining Co. | 4,496,154 | 6,323,671 | 7,775,323 | 7,647,340 | 26,242,488 |
| The Texas Company | 3,606,195 | 4,047,496 | 4,906,262 | 4,883,817 | 17,443,770 |
| Southern Crude Oil Co. | 3,984,993 | 3,811,091 | 4,124,464 | 3,178,537 | 15,099,085 |
| Shell Petroleum Corp. | 3,555,870 | 3,345,652 | 2,998,974 | 2,501,841 | 12,402,337 |
| Yount Lee Oil Co. | 3,076,093 | 2,816,027 | 2,451,953 | 2,243,069 | 10,587,142 |
| Magnolia Petroleum Co. | 2,726,879 | 2,568,770 | 2,490,997 | 2,340,307 | 10,126,953 |
| Mid-Kansas Oil & Gas Co. | 1,781,851 | 2,088,399 | 2,816,515 | 2,980,274 | 9,667,039 |
| Transcontinental Oil Co. | 1,735,375 | 2,068,707 | 2,775,854 | 2,942,595 | 9,522,531 |
| Phillips Petroleum Co. | 1,408,472 | 1,709,129 | 3,037,113 | 2,763,746 | 8,918,460 |
| California Co. | 1,352,761 | 1,507,015 | 1,977,513 | 1,911,891 | 6,749,182 |
| Prairie Oil & Gas Co. | 1,454,272 | 1,497,737 | 1,490,515 | 1,166,691 | 5,609,215 |
| Marland Production Co. | 1,352,907 | 1,817,468 | ..... | ..... | 3,170,375 |
| Atlantic Oil Producing Co. | 1,616,288 | 1,249,824 | 922,423 | 724,200 | 4,512,735 |
| Pure Oil Co. | 2,220,558 | 751,508 | 572,271 | 683,321 | 4,227,658 |
| Sun Oil Co. | 1,338,140 | 1,270,139 | 1,267,598 | 1,235,373 | 5,111,250 |
| Big Lake Oil Co. | 1,189,013 | 1,156,287 | 1,086,768 | 1,038,474 | 4,470,542 |
| Skelly Oil Co. | 1,256,559 | 942,435 | 1,500,523 | 1,181,793 | 4,881,310 |
| Continental Oil Co. | 552,385 | 576,473 | 2,736,431 | 2,635,750 | 6,501,039 |
| Lion Oil & Refining Co. | ..... | 1,108,377 | 1,272,163 | 904,791 | 3,285,331 |
| McMan Oil & Gas Co. | 550,014 | 686,654 | 1,118,570 | 1,052,724 | 3,407,962 |
| Simms Oil Co. | 827,280 | 878,814 | 1,045,097 | 1,101,038 | 3,852,229 |
| Moody Corp. | 824,744 | 833,880 | 809,944 | 740,145 | 3,208,713 |
| Republic Production Co. | 937,707 | 741,855 | 758,447 | 627,911 | 3,065,980 |
| Amerada Petroleum Corp. | 597,164 | 446,898 | 361,127 | 290,295 | 1,695,484 |
| J. S. Cosden, Inc. | 417,580 | 359,903 | 277,558 | 222,783 | 1,277,824 |
| Empire Gas & Fuel Co. | 287,045 | 402,101 | 513,362 | 604,640 | 1,807,148 |
| Fain-McGaha Oil Corp. | 529,205 | 478,951 | 570,985 | 543,863 | 2,123,004 |
| Group 1 Oil Corp. | 449,762 | 496,244 | 498,555 | 481,773 | 1,926,334 |
| Independent Oil & Gas Co. | 430,461 | 368,241 | 317,045 | 338,753 | 1,454,500 |
| Roeser & Pendleton, Inc. | 386,348 | 390,492 | 354,740 | 326,814 | 1,458,394 |
| Rio Bravo Oil Co. | 422,823 | 591,460 | 538,455 | 451,208 | 2,003,946 |
| Texas Pacific Coal & Oil Co. | 306,990 | 357,840 | 354,807 | 307,819 | 1,327,456 |
| Waggoner Refining Co. | 485,128 | 392,235 | 400,050 | 344,224 | 1,621,637 |
| American Maracaibo Oil Co. | 299,902 | 355,367 | 269,424 | 131,266 | 1,055,959 |
| Cranfill & Reynolds | 394,572 | 304,153 | 278,079 | 326,456 | 1,303,260 |
| Navarro Oil Co. | 194,422 | 349,400 | 269,409 | 227,407 | 1,040,638 |
| J. S. Abercrombie Co. | 125,252 | 152,791 | 87,600 | 69,510 | 435,153 |
| Cockrell-McIlroy Oil Co. | 74,573 | 154,098 | 118,282 | 12,636 | 359,589 |
| Cranfill Brothers Oil Co. | 179,119 | 133,820 | 90,817 | 61,520 | 465,036 |
| Champlin Refining Co. | 39,240 | 51,056 | 117,849 | 103,458 | 311,603 |
| Danciger Oil & Refining Co. | 88,811 | 171,867 | 345,048 | 455,927 | 1,061,653 |
| Eastland Oil Co. | 122,592 | 116,911 | 176,547 | 109,787 | 525,837 |
| Grayburg Oil Co. | 207,758 | 243,300 | 185,995 | 182,325 | 819,378 |
| Houston Oil Co. | 78,207 | 126,836 | 157,875 | 202,412 | 565,330 |
| Humphreys Corp. | 197,081 | 206,605 | 229,555 | 438,040 | 1,071,281 |

(Continued on Next Page)

Less fishing—
more drilling

"Let 'er go"—no worry now about tough rock—we have a bit made from ASCO Well Bit Tool Steel. There is no reason to slow up.

A broken bit may mean expensive fishing—loss of time—labor and money.

But these problems are made less costly with ASCO Well Bit Tool Steel.

A bit made from ASCO Well Bit Tool Steel will challenge the toughest of rock formations—eat its way thru by steady drilling.

Where operating conditions are most severe, ASCO Well Bit Tool Steel is the most dependable.

THE ANDREWS STEEL CO.
NEWPORT ASCO KENTUCKY

*—After Three Years*

of comprehensive experience in operating several Buckeyes, the Lone Star Gas Company of Dallas, Texas, makes the unqualified statement that their performance has been "first-rate". Inasmuch as this well-known organization employs a number of Buckeye Ditchers of various sizes, as well as Buckeye Backfillers, their opinion is extremely valuable — a safe guide for purchasers of such equipment to follow.

Supplementing their report, they advise that their preference for Buckeyes is due to the fact that these ditchers are best adapted to main gas line excavation—being faster, cutting better ditches and minimizing grading costs. On one job, their Buckeye pipe line ditcher, illustrated above, dug 15,600 lineal feet of 20-inch by 32-inch trench in 24 hours.

There is a Buckeye—Ditcher, Backfiller or Utility Backfiller-Crane—exactly designed to handle every main or service line job efficiently and economically. Interesting literature information, including complete specifications and prices, will be gladly sent to gas and oil companies and contractors.

THE BUCKEYE TRACTION DITCHER CO.
FINDLAY, OHIO

*There's a Buckeye Sales and Service Office near You*

*for over thirty years*
Buckeye


## GULF LED ALL IN PRODUCTION (Continued)

| Company— | First 3 months (bbls.) | Second 3 months (bbls.) | Third 3 months (bbls.) | Fourth 3 months (bbls.) | Total 12 months (bbls.) |
|---|---|---|---|---|---|
| Howard County Oil Corp. | ..... | 123,119 | 112,093 | 101,098 | 336,310 |
| Kewanee Oil & Gas Co. | ..... | 256,376 | 434,648 | 277,567 | 968,591 |
| Louisiana Oil Refining Co. | 120,565 | 101,759 | 60,047 | 48,159 | 330,530 |
| Murchison Oil Co. | 274,288 | 217,530 | 133,722 | 88,083 | 713,623 |
| Petroleum Producers Co. | 102,390 | 93,423 | 142,535 | 128,335 | 466,683 |
| Mills-Bennett Production Co. | ..... | 131,234 | 278,723 | 193,699 | 603,656 |
| Panhandle Refining Co. | 111,087 | 144,268 | 150,831 | 295,888 | 702,074 |
| Plymouth Oil Corp. | 44,151 | 109,643 | 195,856 | 163,880 | 513,530 |
| Rycade Oil Corp. | 205,944 | 190,799 | 149,115 | 126,398 | 672,256 |
| Merrick & Bristow | 180,651 | 249,858 | 177,743 | 105,414 | 713,666 |
| Moutray Oil Co. | 97,307 | 112,013 | 110,749 | 99,614 | 419,683 |
| Midwest Exploration Co. | 106,651 | 130,254 | 419,084 | 213,236 | 869,225 |
| Operators Oil Co. | 65,449 | 293,378 | 331,861 | 323,176 | 1,013,864 |
| Owen Sloan Oil Co. | 140,729 | 185,745 | 292,671 | 91,595 | 710,740 |
| Ryan Consolidated Oil Corp. | 94,051 | 79,559 | 95,405 | 106,206 | 375,221 |
| E. L. Smith Oil Co. | 191,463 | 152,171 | 145,104 | 270,563 | 759,301 |
| Snowden & McSweeney Co. | 120,039 | 85,550 | 67,807 | 61,397 | 334,793 |
| Sinclair O. & G. Co., Tulsa | 154,212 | 259,171 | 224,566 | 228,024 | 865,973 |
| South Texas Petroleum Co. | 207,884 | 286,809 | ..... | 207,449 | 702,142 |
| Staley-Wynne & Co. | 157,299 | ..... | 208,102 | 235,734 | 601,135 |
| Schermerhorn Oil Co. | 240,842 | 208,758 | 200,393 | 274,461 | 924,454 |
| Saxet Oil Co. | 43,151 | 176,802 | 139,907 | 404,515 | 764,375 |
| Shaw, T. G. | 94,904 | 178,231 | 113,267 | 126,840 | 513,242 |
| Texon Oil & Land Co. | 173,396 | 190,890 | 190,184 | 166,852 | 721,322 |
| Ward Oil Corp. | 50,707 | 122,860 | 128,299 | 173,343 | 475,209 |
| Warner-Quinlan Co. | 250,958 | 203,389 | 251,390 | 199,907 | 905,644 |
| Tidal Oil Co. | 230,615 | 215,210 | 216,362 | 178,708 | 840,895 |
| Total 73 companies | 58,790,442 | 62,540,783 | 69,501,557 | 64,993,484 | 255,826,266 |
| Total 1,220 others* | 9,796,585 | 10,139,444 | 11,026,859 | 11,924,540 | 42,887,428 |
| Total all companies | 68,587,027 | 72,680,227 | 80,528,415 | 76,918,024 | 298,713,694 |

*Estimated.

### PRODUCTION OF LEADING OKLAHOMA OIL COMPANIES IN 1929

(Companies with average net production of 1,000 bbls. per day or over)

| Company— | First 3 months (bbls.) | Second 3 months (bbls.) | Third 3 months (bbls.) | Fourth 3 months (bbls.) | Total 12 months (bbls.) |
|---|---|---|---|---|---|
| Prairie Oil & Gas Co. | 3,988,915 | 4,558,309 | 4,819,184 | 3,689,595 | 17,056,003 |
| Magnolia Petroleum Co. | 3,873,040 | 3,896,259 | 4,368,314 | 3,305,822 | 15,443,435 |
| Sinclair Oil & Gas Co. | 3,115,580 | 3,958,297 | 4,311,176 | 3,665,089 | 15,050,142 |
| Gypsy Oil Co. | 3,555,497 | 3,576,529 | 3,936,253 | 3,361,262 | 14,429,541 |
| Carter Oil Co. | 2,718,560 | 2,659,236 | 2,813,665 | 2,752,016 | 10,943,477 |
| Pure Oil Co. | 2,751,582 | 2,380,947 | 1,844,462 | 1,564,004 | 8,540,995 |
| Independent Oil & Gas Co. | 2,258,844 | 1,722,477 | 1,443,860 | 993,440 | 6,418,621 |
| Shell Petroleum Corp. | 1,563,973 | 1,641,038 | 1,935,129 | 1,903,812 | 7,043,952 |
| Mid-Continent Petroleum Corp. | 1,275,960 | 1,646,372 | 2,115,468 | 1,417,435 | 6,455,236 |
| Barnsdall Oil Co. | 1,287,276 | 1,116,078 | 1,965,361 | 774,182 | 5,142,897 |
| Indian Territory Ill Oil Co. | 1,880,431 | 1,057,813 | 1,348,713 | 2,039,127 | 6,326,084 |
| The Texas Company | 1,320,324 | 1,135,180 | 1,033,596 | 1,076,910 | 4,566,010 |
| Amerada Petroleum Corp. | 870,993 | 815,789 | 814,140 | 729,633 | 3,230,555 |
| Skelly Oil Co. | 944,758 | 767,300 | 785,498 | 665,002 | 3,162,558 |
| Atlantic Oil Producing Co. | 385,695 | 363,496 | 321,393 | 287,311 | 1,357,895 |
| Continental Oil Co. | 101,469 | 124,315 | 622,829 | 549,821 | 1,398,434 |
| Burke-Greis Oil Co. | 176,159 | 203,720 | 254,981 | 321,574 | 956,434 |
| Coline Oil Co. | 47,799 | 57,717 | 294,138 | 333,219 | 732,873 |
| J. S. Cosden, Inc. | 27,460 | 60,039 | 460,605 | 317,299 | 865,403 |
| Comar Oil Co. | 627,254 | 636,852 | 645,145 | 620,002 | 2,529,253 |
| Champlin Refining Co. | 229,743 | 214,498 | 237,204 | 195,266 | 876,711 |
| Darby Petroleum Co. | 141,020 | 459,956 | 569,839 | 434,287 | 1,605,102 |
| Empire Oil & Refining Co. | 318,835 | 618,193 | 737,887 | 579,720 | 2,254,635 |
| Wirt Franklin Petroleum Corp. | 182,387 | 176,750 | 248,427 | 739,172 | 1,346,736 |
| Foster Petroleum Co. | 229,485 | 207,615 | 292,667 | 542,735 | 1,272,502 |
| Dixie Oil Co. | 76,562 | 75,661 | 153,612 | 246,483 | 552,318 |
| Devonian Oil Co. | 46,640 | 63,136 | 269,669 | 262,574 | 642,019 |
| Blackwell Oil & Gas Co. | 441,493 | 346,007 | 341,141 | 305,662 | 1,434,303 |
| Homaokla Oil Co. | 199,334 | 199,903 | 168,990 | 115,196 | 683,423 |
| Coline Oil Co. | 47,799 | 57,717 | 40,830 | 373,931 | 520,277 |
| Humble Oil & Refining Co. | 229,828 | 225,134 | 78,831 | ..... | 533,793 |
| Josey Oil Co. | 160,058 | 155,532 | 97,499 | ..... | 413,089 |
| Kewanee Oil & Gas Co. | 306,720 | 245,306 | 235,394 | 209,818 | 997,248 |
| Louisiana Oil Refining Co. | 91,394 | 109,279 | 104,642 | 81,340 | 386,655 |
| Laurel Oil & Gas Co. | 187,609 | 142,377 | 86,224 | 116,220 | 532,430 |
| Margay Oil Co. | 152,360 | 109,888 | 94,666 | 71,319 | 428,233 |
| Marland Production Co. | 414,173 | 473,798 | ..... | ..... | 887,971 |
| Mid-Kansas Oil & Gas Co. | 330,319 | 283,449 | 266,978 | 610,698 | 1,491,444 |
| Minnehoma Oil Co. | 95,306 | 112,465 | 265,870 | 274,750 | 746,391 |
| Papoose Oil Co. | 90,244 | 158,824 | 139,134 | 93,149 | 481,351 |
| W. B. Pine | 80,960 | 124,807 | 135,100 | 88,532 | 429,399 |
| Phillips Petroleum Co. | 647,155 | 606,577 | 621,630 | 533,089 | 2,408,451 |
| Producers & Refiners Corp. | 278,684 | 101,639 | 298,467 | 301,638 | 980,428 |
| T. B. Slick | 1,475,846 | 112,697 | 391,526 | 311,916 | 2,291,985 |
| Shaffer Oil & Refining Co. | 380,365 | 296,828 | 349,685 | 290,971 | 1,317,849 |
| Ramsey & Ramsey | 154,625 | 129,931 | 108,986 | 116,283 | 509,825 |
| Selby Oil & Gas Co. | 26,680 | 28,568 | 110,674 | 37,853 | 203,775 |
| Simms Oil Co. | 10,708 | ..... | 435,984 | 192,940 | 639,632 |
| Silurian Oil Co. | 106,403 | 113,511 | 121,472 | 99,429 | 440,815 |
| Schermerhorn-Ardmore Co. | 102,843 | 96,173 | 89,469 | 88,062 | 376,547 |
| Superior Oil Corp. | 219,402 | 179,657 | 207,848 | 188,207 | 795,114 |
| Tidal Oil Co. | 632,415 | 620,750 | 609,408 | 513,817 | 2,376,390 |
| Turman Oil Co. | 147,825 | 137,825 | 158,465 | 140,739 | 584,854 |
| Twin State Oil Co. | 576,093 | 796,669 | 620,199 | 479,739 | 2,472,700 |
| Vacuum Oil Co. | 111,163 | 111,163 | 100,909 | 110,902 | 434,137 |
| Wolverine Petroleum Corp. | 170,393 | 169,098 | 173,290 | 171,871 | 684,652 |
| Westheimer & Daube | 217,368 | 186,758 | 165,997 | 138,046 | 708,169 |
| Wentz Oil Corp. | 145,349 | 144,188 | 140,178 | 230,817 | 660,532 |
| Wilcox Oil & Gas Co. | 222,219 | 260,325 | 291,949 | 215,704 | 990,197 |
| Total 58 companies | 42,447,400 | 41,030,415 | 45,694,650 | 39,870,031 | 169,042,496 |
| Total 1,350 others and royalty interests* | 21,430,900 | 21,111,540 | 20,406,287 | 20,238,251 | 83,186,978 |
| Total all companies | 63,878,300 | 62,141,955 | 66,100,937 | 60,108,282 | 252,229,474 |

*Estimated.

## DOMESTIC EXPORTS OF PETROLEUM, REFINED PRODUCTS

| Petroleum— | Month of February 1929 | Month of February 1930 | Two months ending February 1929 | Two months ending February 1930 |
|---|---|---|---|---|
| Crude (bbls.) | 1,678,300 | 1,730,519 | 3,649,944 | 3,538,446 |
| Crude ($) | 2,115,573 | 2,346,127 | 4,754,113 | 4,832,316 |
| Total refined petroleum (bbls.) | 8,925,193 | 9,400,336 | 19,785,303 | 20,561,321 |
| Total refined petroleum ($) | 35,018,553 | 36,778,490 | 77,235,890 | 78,756,722 |
| Gasoline, naphtha and other light products— | | | | |
| (bbls.) | 3,796,941 | 4,835,064 | 8,303,332 | 10,131,423 |
| ($) | 17,496,659 | 20,782,233 | 38,750,624 | 43,914,147 |
| Oils, illuminating (bbls.) | 1,582,320 | 1,197,974 | 3,478,115 | 3,135,511 |
| Oils, illuminating ($) | 6,696,129 | 5,326,573 | 14,351,266 | 12,852,806 |
| Gas and fuel (bbls.) | 2,674,584 | 2,498,729 | 6,017,434 | 5,519,298 |
| Gas and fuel ($) | 3,053,544 | 2,646,693 | 6,741,273 | 5,625,580 |
| Lubricating (bbls.) | 860,230 | 857,723 | 1,961,745 | 1,749,905 |
| Lubricating ($) | 7,619,999 | 7,878,064 | 17,051,067 | 16,029,552 |
| Other refined petroleum (bbls.) | 11,118 | 10,546 | 24,677 | 25,184 |
| Other refined petroleum ($) | 152,222 | 144,927 | 341,660 | 334,637 |
| Paraffin wax (pounds) | 25,345,074 | 18,759,085 | 54,345,992 | 51,084,623 |
| Paraffin wax ($) | 1,324,133 | 748,189 | 2,853,064 | 2,039,622 |

# The Vogt Multitube HEAT EXCHANGER

FURNISHED in 8" or 10" units for moderate or high pressures and temperatures, the Vogt Multitube Heat Exchanger is applicable wherever an exchange of temperatures is desired between gases or liquids.

In battery setting, these exchangers have the tremendous advantage of permitting the introduction of two or more cooling mediums to be brought into contact with the substance to be cooled as it passes in series through the complete battery.

*Ask for Bulletin HE-1 giving construction details*

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(Incorporated)
**LOUISVILLE, KY.**

**New York Chicago Cleveland Dallas Philadelphia**

***Manufacturers:*** *of* OIL REFINERY EQUIPMENT, DROP FORGED STEEL VALVES AND FITTINGS, WATER TUBE AND HORIZONTAL RETURN TUBULAR BOILERS, ICE MAKING AND REFRIGERATING MACHINERY.

# VALVES
# PIPE FITTINGS
# FIRE HYDRANTS

# KENNEDY

THE KENNEDY Valve line for the petroleum industry includes low, medium, high, extra heavy, and extreme pressure gate valves up to 2500-lb. test pressure in a wide range of sizes, and with screwed or flanged ends.

Kennedy Valves and Pipe Fittings are easy to obtain because of the large manufacturing facilities of the two big Kennedy plants and the wide distribution of Kennedy dealers. They are thoroughly dependable in operation because of the half century of experience behind their design and their honest workmanship. And equally important, they are uniformly reasonably priced and economical in maintenance.

These factors explain why the Kennedy plants have grown to be among the largest in the country devoted exclusively to the manufacture of valves and fittings. They explain why it will pay you, too, to standardize on Kennedy products.

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**THE KENNEDY VALVE MFG. CO., ELMIRA, N.Y.**

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# NEW LOCATIONS IN TEXAS PANHANDLE AND NORTH AND WEST TEXAS FIELDS

## TEXAS PANHANDLE
### Week Ending March 26
### Gray County

Gulf Production Co.'s No. 2 A. Combs and others, 990 feet north and 330 feet west of the SE cor., Section 38, Block 3, I.&G.N. Survey. Shamrock Oil & Gas Co.'s No. 4 W. S. Clayton-C, 730 feet south and 718 feet west of the northeast corner of the north 60 acres of the west 140 acres of the east 277.4 acres of Section 50, Block 25, H.&G.N. Survey. Empire Gas & Fuel Co.'s No. 1 W. C. Archer-B, 330 feet north and east of the SW cor. SW, Section 139, Block 3, I.&G.N. Survey. Humble Oil & Refining Co.'s No. 2 Combs & Worley, 330 feet south and 240 feet east of the NW cor. N half SE, Section 36, Block 3, I.&G.N. Survey. McMan Oil & Gas Co.'s No. 8 J. H. Palmer, 330 feet north and 929 feet west of the southeast corner of the east 100 acres of the west 200 acres of Section 31, Block B-2, H.&G.N. Survey. McMan Oil & Gas Co.'s No. 9 J. H. Palmer, 949 feet north and 929 feet west of the southeast corner of the east 100 acres of the west 200 acres of Section 31, Block B-2, H.&G.N. Survey. Prairie Oil & Gas Co. and others' No. 3 P. A. Worley and others (Leycomb), 330 feet north and west of the SE cor. NW, Section 36, Block 3, I.&G.N. Survey.

## NORTH CENTRAL AND WEST TEXAS
### Week Ending March 26
### Andrews County

R. R. Penn and others' No. 1 H. M. Wilson, at the C, Section 20, Block A-37, School Land.

### Archer County

L. T. Burns' No. 1 L. F. Wilson-Q, 450 feet north and 750 feet east of the southwest corner of the southeast of the southwest of the J. M. Taylor Survey No. 2, A-656, and located in Section B, Club Ranch Subdivision. F. P. Cullum's No. 2 Falls County School Land, 550 feet north and 200 feet east of the SW cor., Section 10, Falls County School Land, A-130. Golding-Cochran and others' No. 1 M. Phillips, 150 feet south and east of the northwest corner of the M. Phillips 70-acre tract out of Section 1, Thomas McCoy Survey, A-269. Goldsmith and King Royalty Co.'s No. 10 H. Kunkel, 150 feet south and west of the northeast corner of the south half of the west 80 acres of the H. Kunkel 252-acre tract out of the G. W. Stell Survey, A-381. T. F. Hunter and others' No. 3 A. H. J. Kunkel-B, 852 feet south and 1,288 feet west of the most northerly northeast corner of the G. W. Stell Survey, A-381. Independent Drilling & Producing Co.'s No. 1 J. T. Richardson, 320 feet south and east of the northwest corner of the north 68 acres of the west 100 acres of Section 16, South Anderson Ranch Subdivision. Lawson-Duke and others' No. 3 J. A. Young, 150 feet north and 750 feet west of the SE cor. E half NE, Section 2,426, T.E.&L. Survey. M. & V. Oil Co.'s No. 4 H. Kunkel, 450 feet north and 150 feet west of the southeast corner of the north 40 acres of the west 80 acres of the H. Kunkel 252-acre tract out of the G. W. Stell Survey, A-381. J. H. Massie's No. 2 J. T. Richardson, 150 feet north and 500 feet west of the southeast corner of the north half of the west 40 acres of Section 14, South Anderson Ranch Subdivision. J. H. Massie's No. 3 J. T. Richardson, 150 feet south and west of the northeast corner of the west 10 acres of the south 20 acres of the west 40 acres of Section 14, South Anderson Ranch Subdivision. J. J. Moran and others' No. 1 S. B. Herron, 750 feet south and west of the northeast corner of the east 160 acres of the S. B. Herron 320-acre tract out of the Robert Crossman Survey, A-65. Panhandle Refining Co. and others' No. 19 H. O. Prideaux-C, 1,050 feet north and 150 feet east of the southwest corner of their lease "C" out of the A. Rohus Survey, A-1,126. Prairie Oil & Gas Co.'s No. 9 J. T. Richardson (Clark), 863 feet south and 150 feet east of the northwest corner of the west 40 acres of the east 80 acres of Section 14, South Anderson Ranch. Underwood Drilling Co.'s No. 1 W. R. Farmer, 1,482 feet north and 3,132 feet east of the southwest corner of the Bell County School Land, A-12, being 150 feet north and west of the SE cor. NW, Lot 57, Perkins Subdivision. W. C. Young's No. 2 E. E. Threet, 2,085 feet north and 150 feet east of the southwest corner of the E. E. Threet 310-acre tract out of the M. Pickens Survey, A-341.

### Baylor County

F. C. Grebin's No. 1 W. D. Isenberg, 150 feet north and 850 feet east of the SW cor. NW, Section 2,451, T.E.&L. Survey.

### Brown County

Gunn Production Co.'s No. 2 J. C. Dickens, 2,200 feet south and 1,030 feet west of the northeast corner of the Hrs. N. B. Mitchell Survey, No. 150. R. C. McCarter and others' No. 1 T. B. Buzbee, 550 feet north and 200 feet east of the SW cor., Lot 30, H. P. Brewster Survey, No. 790. Michael & Nichols' No. 2 G. T. Butler, 150 feet north and west of the southeast corner of the J. McGloin Survey, No. 798. G. P. Mitcham and others' No. 2 C. N. Keeler, 150 feet south and 450 feet east of the northwest corner of the J. Padillo Survey, No. 646. L. A. Austin's No. 1 O. H. Nichols, 350 feet north and 150 feet west of the southeast corner of the Mrs. O. H. Nichols 200-acre tract out of the M. M. Flores Survey, No. 614. Baker Brothers' No. 2 G. P. Hall, 450 feet north and 710 feet east of the SW cor., Lot 38, Kerr County School Land, No. 276.

### Callahan County

B. A. Duffy's No. 1 J. W. Brown, 1,572 feet south and 150 feet east of the northwest corner of the A. Ewers Survey, No. 250. Humble Oil & Refining Co.'s No. 2 I. N. Jackson-G, 200 feet north and west of the southeast corner of the north 320 acres of Section 5, T.&N.O. Survey. F. E. Shaheen and others' No. 1 F. L. Alvord, 150 feet south and west of the NE cor. W half SE, Section 80, Bayland Orphan Asylum Land.

### Clay County

Saxet Oil Co.'s No. 2-A J. D. Stine estate-J, 864 feet south and 150 feet east of the NW cor., Section 1, Parker County School Land, A-374.

### Coleman County

Continental Oil Co. and others' No. 17 M. T. Overall, 200 feet north and 550 feet east of the southeast corner of the John Barkley Survey, No. 701, and located in Section 9, Block 1, G.H.&H. Survey. McCamey & Whitfield's No. 1 Sealy Hutchings, 300 feet north and west of the SE cor. NE, Section 59, Block 1, G.H.&H. Survey. Roberts Oil Corp.'s No. 2 George Rae, 1,650 feet north and 4,500 feet west of the southeast corner of the J. B. Beall Survey, No. 301.

### Cooke County

Lloyd Oil Corp.'s No. 10 D. B. Wheelock, 488 feet north and 1,350 feet west of the southeast corner of the west 80 acres of the east 120 acres of the C. Underwood Survey, A-1,073.

### Crockett County

Trans-Texas Oil Co.'s No. 2 J. M. Shannon, 983 feet north and 1,873 feet west of the SE cor., Section 42, T.C.R. R. Survey.

### Glasscock County

Kirby Petroleum Co. and others' No. 2 J. J. Phillips, 990 feet south and 2,310 feet east of the NW cor., Section 23, Block 33, Township 2s, T.&P. Survey. Kirby Petroleum Co. and others' No. 3 J. J. Phillips, 1,650 feet south and 2,310 feet east of the NW cor., Section 23, Block 33, Township 2s, T.&P. Survey. Schermerhorn Oil Co.'s No. 3 J. J. Phillips, 990 feet south and 2,310 feet west of the NE cor., Section 23, Block 33, Township 2s, T.&P. Survey. Shell Petroleum Corp.'s No. 1 J. J. Phillips,

# N TUNE

## *with present day needs of industry* • • •

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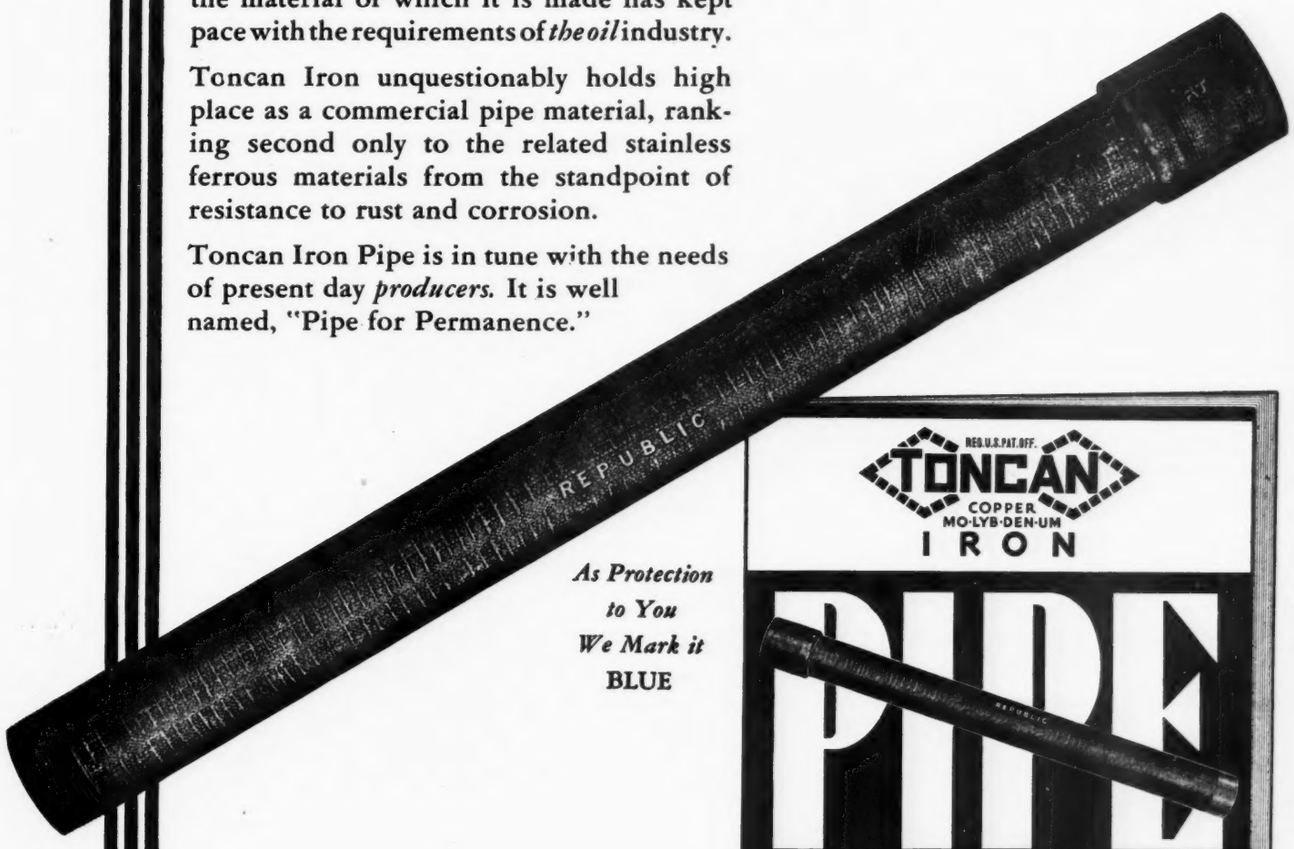
TONCAN
COPPER
MO·LYB·DEN·UM
IRON PIPE

Rust and corrosion are the deadly enemies of all pipe. Their insidious attacks start the moment pipe is put into use. And it is a truism that pipe in oil service withstands destructive agencies only to the extent that the material of which it is made has kept pace with the requirements of *the oil* industry.

Toncan Iron unquestionably holds high place as a commercial pipe material, ranking second only to the related stainless ferrous materials from the standpoint of resistance to rust and corrosion.

Toncan Iron Pipe is in tune with the needs of present day *producers.* It is well named, "Pipe for Permanence."

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## REPUBLIC IRON & STEEL COMPANY
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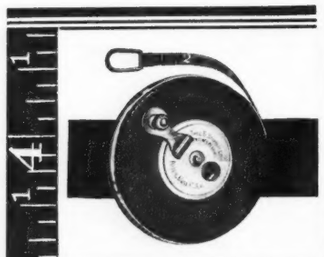

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NAME .....

POSITION .....

ADDRESS .....

.....


1,650 feet south and 2,310 feet west of the NE cor., Section 23, Block 33, Township 2s, T.&P. Survey. Sun Oil Co.'s No. 5 H. Phillips, 1,365 feet north and west of the SE cor., Section 14, Block 33, Township 2s, T.&P. Survey. World Oil Co.'s No. 3 L. S. McDowell-C, 2,310 feet south and west of the NE cor., Section 21, Block 34, Township 2s, T.&P. Survey.

**Erath County**

C. H. Goodwin and others' No. 1 Canfield heirs, 500 feet north and 400 feet west of the southeast corner of the William A. Holland Survey, A-372.

**Jack County**

Brazos River Oil & Gas Co.'s No. 1 P. B. Keyser-B, 597 feet south and 800 feet west of the NE cor., Section 6, S. P.R.R. Survey, A-1,731.

**Jones County**

Atkinson & Sandefer's No. 1 G. M. Byrom, 300 feet north and west of the SE cor., Section 17, Edward Miles Survey, A-259.

**McCulloch County**

Brady Water Works' No. 2 Brady Townsite, 300 feet north and 150 feet west of the SE cor., Section 407, J. F. Brown Survey.

**Montague County**

Barnsdall Oil Co.'s No. 5 R. W. Cunningham and others, 150 feet south and 1,025 feet west of the northeast corner of its 22.5-acre lease, and located in the L. B. Norton Survey, A-574.

**Palo Pinto County**

Dalton Oil Co.'s No. 8 R. S. Dalton, 1,800 feet south and 1,050 feet east of the NW cor., Section 1,789, T.E.&L. Survey. Richardson and others' No. 1 A. Storm, 600 feet northeast of the southwest line and 1,500 feet northwest of the southeast line of the A. Storm 177.5-acre tract out of the T. R. Y. Gimemez Survey, A-1,103.

**Pecos County**

Gulf Production Co.'s No. 24 M. A. Smith and others (tract B), 2,650 feet north and 1,810 feet west of the SE cor., Section 22, Block 194, G.C.&S.F. Survey. California Co.'s No. 1 Jasper County Realty Co., 165 feet southwest of the northeast line and 159 feet northwest of the southeast line of the northwest 160 acres of the southeast 240 acres of the northeast 320 acres of Section 21, Block 10, H.&G.N. Survey. Southern Crude Oil Purchasing Co.'s No. 4 J. H. Tippett-A, 229 feet south and 1,032 feet west of the most easterly northeast corner of its 75-acre lease "A" out of Section 61, Block 194, G.C.&S.F. Survey.

**Reagan County**

Hagan-Emch and Amerada Petroleum Corp.'s No. 1 Sawyer Cattle Co., 330 feet north and 990 feet west of the SE cor., Section 125, Block 1, T.&P. Survey.

**Shackelford County**

L. D. Hill's No. 2 B. S. Walker, 450 feet south and 150 feet west of the northeast corner of the south 80 acres of Section 138, T.E.&L. Survey. Phillips Petroleum Co.'s No. 11 J. A. Parrish, 514 feet south and 150 feet west of the NE cor., Section 47, Blind asylum Land.

**Stephens County**

A. J. Brown Oil Co.'s No. 6 S. J. Riddle, 700 feet south and 1,500 feet east of the northwest corner of the S. J. Riddle 115-acre tract out of Section 67, Block 4, T.&P. Survey. Lone Star Gas Co.'s No. 2 D. N. Ellis, 2,170 feet north and 760 feet east of the southwest corner of the heirs of O. Bailey Survey. W. J. Rhoades' No. 1 R. W. West, 150 feet north and 260 feet east of the SW cor., Section 1,417, T.E.&L. Survey.

**Schleicher County**

Teas & Grant's No. 1 G. C. Allison, 1,320 feet north and east of the SW cor., Section 37, Block K, G.H&S.A. Survey.

**Throckmorton County**

Eumo Oil Co.'s No. 1 R. H. Brown, 1,450 feet south and east of the NW cor., Section 919, T.E.&L. Survey.

**Tom Green County**

Cosden Oil Co.'s No. 1 William Anson, 2,310 feet south and 330 feet west of the NE cor., Section 20, Block 24, H.&T.C. Survey.

**Ward County**

R. F. Owen's No. 1 H. W. Johnson, 100 feet southwest of the northeast line and 1,100 feet northwest of the southeast line of Section 8, Block 33, H.&T. C. Survey.

**Wichita County**

Hiland Oil Co.'s No. 5 R. L. Crudup, 937 feet south and 1,109 feet east of the NW cor., Section 10, Denton County School Land, League 4, A-417. Staniforth and others' No. 3 R. L. Crudup, 450 feet south and 150 feet east of the northwest corner of the east 60 acres of the north 100 acres of Section 10, Denton County School Land, League 4, A-417. Arkansas Fuel Oil Co.'s No. 29 Kemp & Kempner-A, 450 feet south and 1,400 feet west of the northeast corner of Block 82, Kemp Wichita Valley Land. Continental Oil and Hammond's No. 2 J. L. and T. J. Waggoner-A, 150 feet south and west of the NE cor., Lot 7, H. George Survey, A-454. W. H. Hammon's No. 12 S. Mitchell and others, 1,390 feet south and 150 feet east of the northwest corner of the J. T. Lewis Survey, A-460. Humble Oil & Refining Co.'s No. 23 W. H. Taylor, 805 feet north and 150 feet west of the southeast corner of Block 81, Kemp Wichita Valley Land. United Production Co.'s No. 13 W. L. Hodges-A, 200 feet north and 150 feet east of the southwest corner of its 40-acre lease "A" out of the H.&T.B. Survey No. 1, A-139.

**Wilbarger County**

Dixie Oil Co.'s No. 1 W. T. Waggoner-N, 150 feet south and west of the NE cor. W half SE, Section 4, Block 17, H.&T.C. Survey. Hi-Land Oil Co.'s No. 1 R. L. Castleberry, 1,050 feet north and 1,530 feet west of the SE cor. Section 67, Block 14, H.&T.C. Survey.

**Young County**

Benton Brothers' No. 1 Mrs. N. Prideaux, 1,050 feet south and 990 feet west of the northeast corner of the I.& G.N. Survey, A-1,324. Bollin & Lindsey's No. 2 D. L. Wolf, 150 feet south and 450 feet east of the NW cor. NE, Section 165, T.E.&L. Survey. W. R. Cooper's No. 1 A. W. Hardy, 750 feet north and 150 feet west of the SE cor. E half NW, Section 251, T.E.&L. Survey. J. M. Dunn's No. 1 S. A. Doyle, 1,600 feet south and 600 feet west of the NE cor., Section 184, T.E.&L. Survey. Flowers & Barkley's No. 1 W. R. Swetlich, 150 feet north and west of the SE cor. NE, Section 1,590, T.E.&L. Survey. P. Fowler and others' No. 4 R. E. Hill-B, 1,130 feet south and 2,600 feet west of the NE cor., Section 195, T.E.& L. Survey. Halmack Oil Co. and others' No. 2 J. D. Carpenter, 150 feet north and west of the southeast corner of the north 40 acres of the SW, Section 164, T.E.&L. Survey. Hamilton & Anderson's No. 1 J. D. Carpenter, 150 feet north and west of the southeast corner of the east 40 acres of the west 80 acres of the south 180 acres of Section 237, T. E.&L. Survey. W. L. Hawkins and others' No. 1 L. F. Gragg, 980 feet north and 450 feet west of the southeast corner of the south 87.5 acres of the east 350 acres of the L. F. Gragg 724.5-acre tract out of the A. Rohus Survey, A-240. Lindsey Drilling Co.'s No. 1 A. J. White, 150 feet north and east of the SW cor. W half NE, Section 213, T. E.&L. Survey. E. B. Madden and others' No. 1 J. O. Winkler-A, 842 feet south and 2,367 feet west of the northeast corner of the J. O. Winker 232-acre tract out of the I. Holeman Survey, A-130. A. Mitchell's No. 2 J. P. Dunagan, 450 feet south and 150 feet east of the NW cor. NE, Section 163, T.E.&L. Survey. Panhandle Refining Co. and others' No. 16 H. O. Prideaux-C, 450 feet north and 750 feet east of the southwest corner of their lease "C" out of the A. Rohus Survey, A-240. Panhandle Refining Co. and others' No. 17 H. O. Prideaux-C, 450 feet north and east of the southwest corner of their lease "C" out of the A. Rohus Survey, A-240. A. H. Parks' No. 1 W. D. Hall, 150 feet north and west of the southeast corner of the south 60 acres of the north 86 acres of W. D. Hall's 186-acre tract out of Section 167, T.E.&L. Survey.

Perkins & Butler and others' No. 4 J. W. Whitt, 450 feet south and 150 feet east of the northwest corner of the east 30 acres of the J. W. Whitt 109-acre tract out of Section 160, T.E.&L. Survey. Perkins & Cullum's No. 1 E. J. Dunagan, 150 feet north and east of the southwest corner of the south 30 acres of the west 60 acres of the E. J. Dunagan 65-acre tract out of Section 157, T. E.&L. Survey. Perkins & Cullum's No. 7 J. L. Lemmond, 830 feet north and 150 feet west of the southeast corner of the north 80 acres of the J. L. Lemmond tract out of Section 1, B.B.B.&C. Survey, A-35. E. Remington's No. 1 E. M. Remington, 150 feet south and 450 feet east of the NW cor., Section 2,248, T. E.&L. Survey. E. R. Riggs' No. 1 O. Andrews, 570 feet south and 300 feet east of the northwest corner of the north 50 acres of the east 200 acres of Section 150, T.E.&L. Survey. E. R. Riggs' No. 7 P. J. Keeter, 450 feet south and east of the NW cor., Section 150, T.E. &L. Survey. Riggs & Kliner's No. 1 S. Hardy, 450 feet south and 150 feet west of the northeast corner of the west 60 acres of the S half, Section 251, T.E. &L. Survey. Riner & Omohundro's No. 1 E. C. Keith, 150 feet north and west of the southeast corner of the north 20 acres of the east 60 acres of the south 160 acres of Section 268, T.E.&L. Survey. Stump & Heydrick's No. 5 J. B. Daniel, 150 feet north and 450 feet east of the southwest corner of the south 40 acres of the E half, Section 164, T.E.& L. Survey. C. Wainwright's No. 2 Mrs. M. Garvey, 1,150 feet north and 150 feet east of the southwest corner of the west 40 acres of the Mrs. M. Garvey 180-acre tract out of Section 291, T.E.&L. Survey. Williams and others' No. 3 C. J. Taack, 450 feet south and 150 feet east of the northwest corner of the west 40 acres of the SW, Section 263, T.E.&L. Survey. Wo-Mac Oil Co.'s No. 4 Stephens Roach Co., 1,200 feet north and 150 feet

## LEGAL

SALE OF OIL AND GAS LEASES, DEPARTMENT OF THE INTERIOR—Shreveport, Louisiana, Notice is hereby given that the following described land in three units in the known geologic structure of the Monroe Gas Field, Louisiana, are offered for lease under Section 17 of the Act of February 25, 1920 (41 Stat. 437), at the customary sliding scale of 12½ to 33⅓ per cent of the quantity or value of the oil produced (except as to SW¼ NE¼ Sec. 26, T. 20 No., R. 3 E., in which only the gas content has been reserved to the United States) of 12½ to 16⅔ per cent of the value of the gas produced and of 16⅔ per cent of the value of the natural gas gasoline produced from each unit in accordance with the royalty schedule in the regular lease form and the rental as required by Section 17 of the said act: Unit No. 1—T. 18 N., R. 4 E., Sec. 24, Lot 3, 9.24 acres. Unit No. 2—T. 19 N., R. 5 E., Sec. 10, SE¼ SE¼, 39.82 acres; T. 20 N., R. 5 E., Sec. 34, SE¼ SE¼, 40.07 acres. Unit No. 3—T. 20 N., R. 3 E., Sec. 26, SW¼ NE¼, 39.75 acres. All Louisiana Meridian, Louisiana. The units are to be offered separately and are to be so considered as a basis for the payment of royalty, but all the units may be included in one lease if awarded to one bidder. The lessee will be required to proceed with reasonable diligence to install standard or other efficient drilling outfits and equipment and within three months of delivery of the executed lease to commence drilling one well on each tract of the leasehold. The drilling of each well shall be continued to production or to a point where the well is demonstrated unsuccessful; and if any well be demonstrated unsuccessful additional wells shall be drilled in lieu thereof until one productive well shall be drilled on each tract or the tract proved barren. Neither more nor less than one productive well shall be drilled on any tract without consent in writing first obtained from the lessor. After drilling operations shall be initiated and thereafter prosecuted continuously and diligently in accordance with the Federal oil and gas operating regulations and with the oil and gas conservation laws of the State of Louisiana. Said leases will be offered for sale by public auction at the Federal Court Room, Shreveport, Louisiana, at 10 a.m. on May 3, 1930, to the bidder or bidders offering the highest bonus for the leases on the terms specified. The successful bidder must deposit on the date of sale with the offficer in charge of the sale certified check on a solvent bank, or cash, for one-fifth of the amount bid by him, and file the showing of qualifications to receive a lease required by Section 15 of said regulations. Bidders are warned against violations of the provisions of Section 59, U. S. Criminal Code, approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any or all bids in the discretion of the Secretary of the Interior. James W. Neal, Officer in Charge.

east of the southwest corner of the Stephens Roach Co. tract out of Section 1, B.B.B.&C. Survey, A-35. D. L. Wolf's No. 5 R. E. Hill, 1,500 feet south and 1,900 feet west of the NE cor., Section 195, T.E.&L. Survey, being 450 feet south and west of the northeast corner of his 22.2-acre lease. Wood Drilling Co.'s No. 1 E. C. Keith, 750 feet south and east of the NW cor. SW, Section 267, T.E.&L. Survey. W. C. Young's No. 1 H. N. Lewis, 150 feet north and east of the northwest corner of the west 40 acres of the south 80 acres of the W half, Section 187, T.E.&L. Survey. E. C. Stovall's No. 13 Stovall, 6,200 feet south and 150 feet west of the northwest corner of James Tobin Survey, A-279, and located in the S. Tankersley Survey, A-278.

**Corrections**

In Archer County: Coombs & Rogers' No. 1 L. J. Kunkel, 150 feet north and 450 feet west of the southeast corner of the north 60 acres of the L. J. Kunkel 160-acre tract out of the B.S.&F. Survey No. 2, A-827.

In Callahan County: Gibson & Johnson's No. 3 I. N. Jackson, 150 feet north and east of the SW cor. SE, Section 16, E.T.R.R. Survey.

In Young County: Madden & Hunt's No. 4 H. Kunkel (formerly Deitrich's), 150 feet north and 750 feet east of the southwest corner of their lease out of the G. W. Stell Survey, A-256.

## WILDCAT OPERATIONS IN KANSAS

(Continued from Page 60)

**DOUGLAS COUNTY**

Steinbuckel's No. 1 Unknown, SW NE NW Sec. 34-14-21 .. Drlg. 810 ft.
Jenkins & Scott's No. 1 Haden, SE NW Sec. 10-12-17 .. Shut down 550 ft.

**EDWARDS COUNTY**

Skelly's No. 1 Johnson, NE SW Sec. 21-26-17w ..... Drlg. 4,635 ft.
Barnsdall Oil's No. 1 McCarty, NW NE Sec. 31-25-17w .. Drlg. 4,547 ft.
Dixie and Amerada's No. 1 McCarty, SW cor. Sec. 22-25-17w ..... Drlg. 4,345 ft.

**ELLIS COUNTY**

Central Commercial Oil Co.'s No. 1 Helms, SE cor. NE Sec. 2-12-20w ..... Drlg. 300 ft.
Streeter & Stearns' No. 1 Leiker, SW NE Sec. 26-13-20w. Shut down 1,250 ft.
Byrene et al's No. 1 Fisher, NW SE Sec. 4-11-20w .... Shut down 1,900 ft.
Rush Oil Co.'s No. 1 Gatewood, NW cor. NW Sec. 4-15-20w ..... Underreaming 6-in. csg. 2,960 ft.

**ELLSWORTH COUNTY**

Tatlock et al's No. 1 Sackem, C SW SE Sec. 25-17-9w .. Cleaning out 3,321 ft.

**FORD COUNTY**

McNabb et al's No. 1 Fowler, C SE Sec. 26-27-22w .... Shut down 400 ft.
Swain et al's No. 1 Kenthorne, C NW Sec. 21-25-24w .. Drlg. 1,475 ft.

**GRAHAM COUNTY**

Gulf Coast Oil Co.'s No. 1 Johnson, C S half Sec. 27-8-25w. Shut down 4,310 ft.
Naylor et al's No. 1 St. John, NW SE SE Sec. 27-8-25w.. Rig.

**GREENWOOD COUNTY**

John Harwood's No. 1 Good, C SW NW NE Sec. 36-25-9 ..... Drlg. 495 ft.
Mallory's No. 1 Denchfield, SE NW Sec. 12-27-9 ..... Drlg. 660 ft.
Bundy, Smith & O'Neil's No. 1 Ford, NE NW Sec. 28-25-13 ..... Shut down 50 ft.
F. Konkay et al's No. 1 Rock, NW NE NE Sec. 7-27-12.. Drlg. 1,200 ft.

**HARPER COUNTY**

Beeler et al's No. 1 Bear, C NE Sec. 21-31-6w ..... Shut down 1,830 ft.

**HARVEY COUNTY**

Mrs. Gay et al's No. 1 Grove, C NW NE NW Sec. 29-23-1w ..... Drlg. 3,370 ft.

**HODGEMAN COUNTY**

Phillips Pet.'s No. 1 Hausman, NW NE Sec. 30-22-22w .. Shut down 5,939 ft.

**JOHNSON COUNTY**

Forrester et al's No. 1 Yazel, CEL SE SE Sec. 18-12-22.. 6-in. csg. 1,215 ft.

**LINN COUNTY**

Ferguson & Hiatt's No. 1 Carple, NE SE SW Sec. 22-21-22 ..... Rig.

**LYONS COUNTY**

Aladdin & Phillips' No. 1 Ratcliff, SW cor. Sec. 29-20-10. Spudding.
Sheedy et al's No. 1 Evers, C NE SE NE Sec. 4-21-10 .. Drlg. 2,350 ft.

**MARION COUNTY**

Marshall et al's No. 1 Higgins, NE cor. Sec. 33-19-5 .... Rig.

**MARSHALL COUNTY**

Swicker & Sincox's No. 1 Remple, C N half NW Sec. 22-4-9 ..... Drlg. 1,000 ft.
Brazier et al's No. 1 Runkel, SE NW Sec. 13-2-6 ..... Rig.

**McPHERSON COUNTY**

Harry Skelly et al's No. 1 Neufeldt, SE NE Sec. 19-21-3w ..... Rig.
Galt-Brown et al's No. 1 Zeitlow, C NE SE SE Sec. 7-17-1w ..... Drlg. 2,625 ft.
Dixie Oil Co.'s No. 1 Johnson, SW cor. Sec. 20-17-3w .. Abandoned 3,604 ft.
Kansas Oil Co.'s No. 1 Otto, SW NW Sec. 21-20-1w .... Shut down 3,644 ft.
Mihnac's No. 1 Decker, NW cor. Sec. 11-20-3w ..... Drlg. 1,900 ft.

**MIAMI COUNTY**

Clark's No. 1 Vaughn, SE SW Sec. 28-17-22w ..... Shut down 50 ft.

**MORTON COUNTY**

Mangle et al's No. 1 Youngren, C SE NW Sec. 24-32-42.. Spudded; shut down.

**MORRIS COUNTY**

Henderson et al's No. 1 Seisman, SW SE Sec. 24-16-9 .... Rig.
Urschell et al's No. 1 Scott, NE NW Sec. 6-16-6 ..... Drlg. 2,115 ft.

**NORTON COUNTY**

Richards et al's No. 1 Colby, Sec. 17-4-21w ..... Rig.

**PAWNEE COUNTY**

Prairie O. & G. Co.'s No. 1 Black, SW NE NE Sec. 11-20-18w ..... Shut down 4,011 ft.; water.

**PRATT COUNTY**

O'Haver & Jones' No. 1 Garacke, C NE SW Sec. 7-26-14w ..... Drlg. 4,346 ft.
Wilcox O. & G. Co.'s No. 1 Bappin, SW NW Sec. 7-26-15w ..... Fishing 2,785 ft.

**RENO COUNTY**

C. A. Cheney and M. M. Valerius' No. 1 Stevens, C NE SE NE Sec. 6-26-7w ..... Drlg. 1,350 ft.
Wilcox O. & G. Co.'s No. 1 McPheeters, SW NW Sec. 22-26-8w ..... Shut down 4,330-60 ft.; water.
Witt's No. 1 Olsen, C SE NW Sec. 14-22-6w ..... Drlg. 3,910 ft.
Skelly Oil Co.'s No. 1 Birkett, NE NW Sec. 30-24-7w .. Wilcox sand 4,172-96 ft.; water; shut down; total depth 4,247 ft; plugging back to 2,191 ft.

**RICE COUNTY**

Tatlock et al's No. 1 Ploog, C SW SE Sec. 33-18-9w .... Rig.
Burgher's No. 1 Fair, C SE NE NE Sec. 14-21-10w .... Drlg. 3,304 ft.
Derby Oil Co.'s No. 1 Johnson, C NW NE SE Sec. 24-20-6w ..... Abandoned 3,652-58 ft.; water.
Danciger et al's No. 1 Bell, C SW Sec. 16-19-8w ..... Shut down 3,492-98 ft.; water.
McCulloch et al's No. 1 Williams, C NE Sec. 35-20-8w .. Shut down 1,438 ft.

**RILEY COUNTY**

Grey et al's No. 1 Smith, NE SE Sec. 30-6-6 ..... Shut down 1,970 ft.
Derby & Shaw's No. 1 Lindstrom, NE cor. Sec. 32-7-5e.. Shut down 2,245 ft.

**ROOKS COUNTY**

A. H. Kruger's No. 1 Steis, NW SE SW Sec. 12-9-16w .. Shut down 570 ft.

**RUSH COUNTY**

Danciger Oil & Refining Co.'s No. 1 Nave, NW cor. Sec. 26-17-17w ..... Total depth 3,606 ft.; shut down.

**RUSSELL COUNTY**

Gilbreath et al's No. 1 Bratton, C NE Sec. 33-11-13w .. Drlg. 1,010 ft.

**SEDGWICK COUNTY**

T. C. Johnson's No. 1 Petrie, SW SE Sec. 35-26-1w .... Drlg. 750 ft.
Tavender et al's No. 1 McLean, SE SW SE Sec. 23-26-1w ..... Shut down 975 ft.


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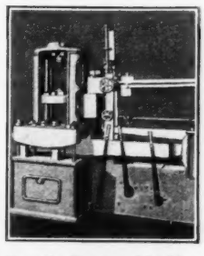

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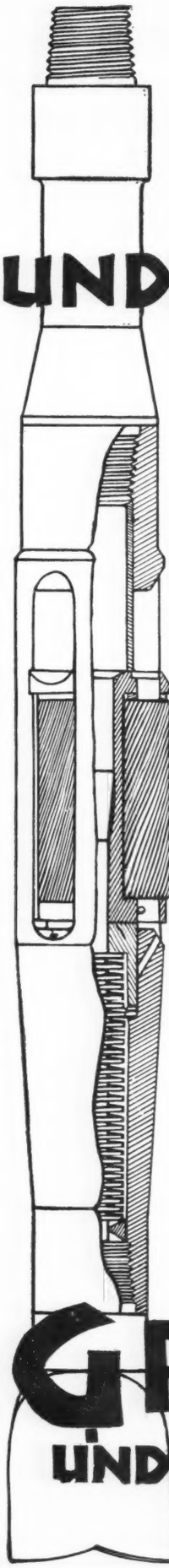

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# GRANT
## UNDERREAMERS
## 2 TOOLS IN 1


McCulloch Oil Co.'s No. 1 Buckles, NW cor. SE Sec. 3-28-1w ..... Shut down 1,115 ft.

**SHAWNEE COUNTY**

Forrester et al's No. 1 Humer, NE cor. Sec. 14-11-16 .... Drlg. 2,800 ft.
Jenkins & Scott's No. 1 Sherman, NW NE Sec. 28-10-15 ..... Shut down 985 ft.
Jenkins & Scott's No. 1 Haden, NE SE Sec. 8-12-14 .... Shut down 1,040 ft.

**SHERIDAN COUNTY**

Mandalin O. & G. Co.'s No. 1 Unknown, C SE SW SW Sec. 27-7-26w ..... Spudded; shut down.

**STAFFORD COUNTY**

Boucher Oil's No. 1 Groves, NE cor. Sec. 9-22-11w .... Rig.
Midwest's No. 36 Richardson, SE cor. Sec. 36-22-12w .... Rig.
Gibson's No. 1 Mueller, C SW Sec. 11-23-14w ..... Drlg. 3,933 ft.

**STEVENS COUNTY**

Argus Gas Co.'s No. 1 Christopher, C SW Sec. 11-33-39w .. Rig.
Argus Oil Co.'s No. 1 Armstrong, CNL S half NW Sec. 16-34-39w ..... Drlg. 2,245 ft.
Argus Oil Co.'s No. 1 Parker, C SW Sec. 19-34-36w .... Drlg. 2,445 ft.
Argus Oil Co.'s No. 1 Smith, C SW Sec. 13-33-37w ..... Drlg. 2,577 ft.
McNabb et al's No. 1 Ramey, C SW Sec. 1-33-38w .... Drlg. 2,450 ft.
Argus Gas Co.'s No. 1 Hobbe, C SE Sec. 17-32-37w .... Fishing 2,625 ft.
W. Sidwell et al's No. 1 Kelly, SW cor. NE Sec. 16-34-38w ..... Shut down 1,600 ft.

**SUMNER COUNTY**

Hatfield's No. 1 Dauber, NE cor. Sec. 18-30-1w ..... Shut down 50 ft.
Slick et al's No. 1 Peasel, NW cor. Sec. 33-31-1w ..... Chat 3,651 ft.; drilled to 3,668 ft.; drlg. deeper at 4,035 ft.
E. K. Carey and Laredo Oil Co.'s No. 1 Welsch, SW SE Sec. 9-34-1e ..... Drlg. 3,983 ft.
Davidson et al's No. 1 Strickland, SW cor. SE Sec. 12-35-1w ..... Rig.

**TREGO COUNTY**

Dixie and Amerada's No. 1 Reitmayer, C NE NE Sec. 19-14-21w ..... Drlg. 3,900 ft.
Day et al's No. 1 Guyler, SW NE NE Sec. 36-12-21w .. Shut down 50 ft.

**WOODSON COUNTY**

Derby & Spencer's No. 1 Kingon, CNL SE NW Sec. 29-23-15 ..... Drlg. 400 ft.

## WILDCAT OPERATIONS IN NEBRASKA

**FRANKLIN COUNTY**

U. R. Drlg. Co.'s No. 1 Brunkle (twin well), C NW SW NE Sec. 2-3n-13w ..... Rig.

**CHASE COUNTY**

Chase Pet. Co.'s No. 1 Ingold, C NE Sec. 24-6n-38w .... U.R. 5-in. csg.; T.D. 4,265 ft.

**FURNAS COUNTY**

Southwestern Pet. Corp. of Nebraska's No. 1 Montague, SE SW SW Sec. 28-1n-22w ..... Shut down 1,750 ft.
Graham Bros.' No. 1 Edwards, NW SW Sec. 13-2n-22w .. Shut down 3,250 ft.

**RICHARDSON COUNTY**

Norton et al's No. 1 Albin, NE cor. Sec. 26-1-14 ..... 10-in. csg. 1,600 ft.

**ROCK COUNTY**

North Central Dev. & Drlg. Co.'s No. 1 Leonard, SE cor. NE Sec. 14-32-18w ..... Drlg. 900 ft.

**WEBSTER COUNTY**

Mid-Kansas Exploration Co.'s No. 1 Platt, C SE one-half Sec. 3-1n-11w ..... Shut down 555 ft.

## WILDCAT OPERATIONS IN OKLAHOMA

(Continued from Page 58)

Continental and Barnsdall's No. 1 Brown, CNL SW Sec. 10-20-4w ..... Shut down 5,690 ft.
E. L. Love et al's No. 1 White, SE cor. NW Sec. 9-24-6w ..... Shut down 5,566 ft.

**GRADY COUNTY**

J. V. Bailey's No. 1 Hubbard, C NE NW Sec. 1-10-6w .. Shut down 100 ft.
J. M. Henry et al's No. 1 Abraham, SE cor. NW Sec. 4-5-8w ..... Rig.

**GRANT COUNTY**

Gypsy Oil Co.'s No. 1 Belderbeck, C SE SE Sec. 27-28-7w. Wilcox 5,647 ft.; cementing csg. 5,916 ft.
Baucher et al's No. 1 Deadman, SW SE Sec. 12-28-4w.. Fishing 4,737 ft.
Cowden et al's No. 2 Vollmer, CEL NE SW Sec. 22-25-4w. Shut down 5,640 ft.
Otstot's No. 1 Tabor, C NE NE SE Sec. 23-26-3w ..... Drlg. 4,765 ft.

**GARVIN COUNTY**

Nelson et al's No. 1 Strickland, NE SW Sec. 10-4-3 ..... Drlg. 1,560 ft.
Pickham-Harris' No. 1 Community Gaines, C NW NE Sec. 11-4-1 ..... Drlg. 4,375 ft.

**GREER COUNTY**

Helmerich & Payne's No. 1 Henck, NW cor. Sec. 23-6-24w ..... Fishing 2,240 ft.
I. T. I. O. et al's No. 1 fee, C SW NE Sec. 17-6-24w .... Drlg. 2,243 ft.

**HARMON COUNTY**

Harmon-Tex Oil Co.'s No. 1 Hoadley, NE cor. Sec. 17-4-24w ..... Drlg. 1,150 ft.
S. M. Stauffer's No. 1 Castleman, SW NE Sec. 8-4-26w.. Shut down 625 ft.

**HARPER COUNTY**

Empire's No. 1 Bruce, C NE SW Sec. 12-25-20w ..... Drlg. 2,850 ft.
Sinclair Oil & Gas Co.'s No. 1 Howell, C SW SW Sec. 14-26-24w ..... Drlg. 7,810 ft.

**HASKELL COUNTY**

Mid-Western's No. 1 T. Polster, C NE SE Sec. 33-10-22 .. Drlg. 2,310 ft.
Holden's No. 1 Phillip, SE cor. Sec. 3-9-18e ..... Shut down 1,860 ft.
Marion Oil's No. 1 Sanders, NW NE SW Sec. 10-9-18e.. Shut down 2,387 ft.
Sanboise Gas' No. 1 Unknown, SW NW SE Sec. 32-9-21e.. Shut down 2,100 ft.

**HUGHES COUNTY**

Wright et al's No. 1 Ott, SE SW Sec. 15-5-11 ..... Rig.
Canady et al's No. 1 Kanard, NW SW Sec. 29-9-12 .... 1,000,000 ft. gas 2,284-90 ft.; total depth 2,815 ft.; shut down.
Irwin et al's No. 1 Jones, SE NW Sec. 30-5-10 ..... Drlg. 1,500 ft.

**KAY COUNTY**

Alco Royalty Co.'s No. 1 Wolf, SE SW SE Sec. 34-26-2w. Location.
Waggoner Pet. Co.'s No. 1 Hinkle, C SW NW NW Sec. 3-26-3 ..... O.W.D.; total depth 2,430 ft.
Blankenship Petroleum Co.'s No. 1 Hansen, SW NW SW Sec. 17-27-2 ..... Shut down 50 ft.
Skelly and Empire's No. 1 Maple, SW cor. Sec. 20-27-4.. Drlg. 2,525 ft.

**KINGFISHER COUNTY**

Superior Oil Co.'s No. 1 Story, SE cor. Sec. 25-19-5w .. Fishing 6,285 ft.
Galt Brown's No. 1 Wolf, NW SE Sec. 6-16-7w ..... Shut down 6,015 ft.

**KIOWA COUNTY**

Merrick Oil Co.'s No. 1 Kelly, NW cor. SE Sec. 20-7-17w. Shut down 1,525 ft.

**LEFLORE COUNTY**

Red Bank Oil Co.'s No. 1 fee, SE SW NW Sec. 23-9-24.. Total depth 5,440 ft.; 15,000,000 ft. gas; fishing 5,483 ft.

**LATTIMER COUNTY**

Limestone O. & G. Co.'s No. 1 Shaw, NW cor. NE NW Sec. 23-5-18e ..... Drlg. 2,640 ft.

**LINCOLN COUNTY**

Tom Slick Oil Co.'s No. 1 Hammer, SE NW NW Sec. 35-16-2 ..... Drlg. 2,650 ft.

**LOGAN COUNTY**

Prairie and Slick's No. 1 Morgan, NW NE Sec. 33-16-1w ..... Rig.
Currier's No. 1 Young, C SW NE SW Sec. 34-17-4w .... Rig.
Haley & Smith's No. 1 Guier, SE cor. SW Sec. 33-18-3w. Shut down 3,970 ft.

**McCLAIN COUNTY**

Sunray Oil's No. 1 Newsome, C SE NE NE Sec. 16-5-3 ..Wilcox 3,995-4,050 ft.; total depth 4,078 ft.; water; abandoned.

**McINTOSH COUNTY**

T. C. Young's No. 1 Derrison, Sec. 3-12-15 .....Drlg. 2,000 ft.
Jennings Brothers' No. 1 Crabtree, NW SW NE Sec. 31-10-14 .....Cementing 5-in. csg. 4,714 ft.
Patterson et al's No. 1 Smith, SW cor. NW SE Sec. 32-9-16 .....Shot 240 qts. 5,446-5,559 ft.; shot went off up hole; fishing.

**MURRAY COUNTY**

Chieftain Royalty Corp.'s No. 1 Hendrix, SW SE NW Sec. 27-2-2 .....Rig.

**MUSKOGEE COUNTY**

Sioux Oil Co.'s No. 1 Unknown, NW SE Sec. 21-11-19....Shut down 1,011 ft.

**NOBLE COUNTY**

Weaver & Craigin's No. 1 Frederick, C SW NE Sec. 4-24-1w .....Location.
Gypsy Oil Co.'s No. 1 Bergstrom, SE NE Sec. 28-22-1w ..Drlg. 3,060 ft.

**OKFUSKEE COUNTY**

Irwin et al's No. 1 Allen, SE SW NE Sec. 15-13-9 .....Drlg. 2,030 ft.
Henry Oil Co.'s No. 1 Harjo, Sec. 36-12-9 .....Shut down 2,795 ft.
E. L. Robinson's No. 1 Rice, NW Sec. 2-10-9 .....Location.
Shepard et al's No. 1 Neveas, SE NW SW Sec. 3-12-10..Shut down 3,661 ft.

**OKLAHOMA COUNTY**

Prairie and Slick's No. 1 Dill, SE NW Sec. 17-13-3w ....Rig.
Cromwell-Franklin's No. 2 Thompson, SW NE Sec. 15-12-3w .....Drlg. 3,066 ft.
Warr et al's No. 1 Castle, SW NW Sec. 20-11-3w .....Drlg. 2,850 ft.
J. F. Cuniff, trustee's No. 1 Church Land, NE SW SE Sec. 17-12-4w .....Drlg. 4,840 ft.
Magnolia and Ramsey's No. 1 Johnson, C NE SW Sec. 35-13-3w .....Drlg. 5,266 ft.
Ryan Consolidated's No. 1 Lawton, NE NW Sec. 3-11-2w. Drlg. 5,569 ft.
Tom Slick Oil Co.'s No. 1 Martin, C NW NW Sec. 13-13-1w .....T. D. 6,971 ft.; water; plugging back 6,871 ft.; testing.
Hall & Briscoe's No. 1 Holmes, NE cor. SW SE Sec. 10-11-3w .....Drlg. 5,174 ft.

**OSAGE COUNTY**

Peters Petroleum Co.'s No. 1, SW cor. NE Sec. 5-22-8 ...Spudding.
Kay County Gas' No. 1, C N half NE Sec. 28-24-4 .....Drlg. 2,115 ft.
Continental Oil Co.'s No. 1, NW SE SE Sec. 24-24-5 ....Drlg. 3,165 ft.

**PAWNEE COUNTY**

Flynn & Morgan's No. 1 Jones, SW NE Sec. 22-20-5....Rig.
Cochran et al's No. 1 Green, NE cor. SW Sec. 15-23-5 ..Rig.

**PITTSBURG COUNTY**

Empire O. & R. Co.'s No. 1 Williams, C NE SE Sec. 33-7-16e .....Fishing 3,975 ft.

**POTTAWATOMIE COUNTY**

Keister & Manning's No. 1 Rowlett, SW SE NE Sec. 30-8-4 .....Drlg. 4,468-80 ft.; pinched to 100 bbls.
Payne Drlg. Co.'s No. 1 Bullock, SE NE Sec. 22-6-3 ....Shut down 4,130-4,201 ft.; hole full water.

**ROGER MILLS COUNTY**

Bucy & Stone's No. 1 Williams, C SW Sec. 23-12-24w..Drlg. 2,245 ft.
L. C. Hivick's No. 1 Davis, C NW NE Sec. 4-11-26w ...Shut down 2,905 ft.

**SEMINOLE COUNTY**

M. H. Watt et al's No. 1 McGilbray, SE NE Sec. 4-8-8 ...Location.
Magnolia and Twin State Oil Co.'s No. 1 Harns, SW NE NE Sec. 8-5-6 .....Drlg. 1,655 ft.
Independent Oil & Gas Co.'s No. 1 Johnson, C NE NE Sec. 33-9-8 .....Drlg. 3,374 ft.
Prairie Oil & Gas Co.'s No. 1 Anders, NW cor. Sec. 23-6-6 .....Drlg. 3,645 ft.
Anderson & Kerr's No. 1 Morgan, SE cor. Sec. 19-6-6...T. D. 2,950 ft.; P. B. to 2,790 ft.; shot 5 qts. made 25 bbls.
Sunray Oil Co.'s No. 1 Sunday, NW SE Sec. 35-5-5 .....Location.

**WASHITA COUNTY**

Southern Inv. Co.'s No. 1 Musie, NW cor. Sec. 10-9-20w..Drlg. 280 ft.

**WOODS COUNTY**

Peerless O. & G. Co.'s No. 1 Crowell, C NW NE Sec. 23-28-16w .....Drlg. 5,160 ft.
Gypsy-Prairie et al's No. 1 Thompson, SE cor. SW Sec. 10-25-15w .....Shut down 6,104 ft.
Sinclair Oil & Gas Co.'s No. 1 Showwalter, C SW SW Sec. 33-27-16w .....Shut down 6,790 ft.

**WOODWARD COUNTY**

Farrond et al's No. 1 Unknown, SE cor. SW SE Sec. 2-22-17w .....Shut down 1,387 ft.
Prairie Oil & Gas et al's No. 1 Wilbur, NE cor. NW Sec. 22-23-17w .....Drlg. 6,270 ft.
Burgoyne Brothers' No. 1 Merkins, SW cor. SE NE Sec. 15-21-19w .....Shut down 1,910 ft.

**OKLAHOMA PANHANDLE**

Argus Prod. Co.'s No. 1 Ralston, C SW Sec. 23-6n-14e ..Rig on ground.

**SOUTHERN OKLAHOMA**

**ATOKA COUNTY**

Bryant-Croxton's No. 1 Mason, NW NE NW Sec. 4-1s-14..Shut down 1,498 ft.
Bookshire's No. 1 Guinn, NW cor. Sec. 18-3s-10 .....Shut down 100 ft.

**BRYAN COUNTY**

Bush et al's No. 1 Commerce Trust, NE cor. Sec. 35-6s-9 .....Spudding.
Johnson et al's No. 1 Ussery, SE SW SE Sec. 14-6s-7e..Drlg. 200 ft.
Slab Oil Co.'s No. 1 Ryle, NW SE SE Sec. 27-6s-7 ....Drlg. 732 ft.
Magnolia's No. 2 fee, C SW SE NW Sec. 26-5s-7 .....Shut down; 6-in. csg. 265 ft.
Yale Oil Syndicate's No. 1 Craige, C NW NE Sec. 36-9s-9e .....Shut down 2,200 ft.

**CARTER COUNTY**

Campen-Lasater Co.'s No. 1 Anderson, NE cor. SE NE SE Sec. 32-4s-2 .....Drlg. 2,345 ft.

**CHOCTAW COUNTY**

Choctaw Petroleum Co.'s No. 1 Wilson, SW cor. SW Sec. 15-6-19e .....Shut down 1,346 ft.

**COMANCHE COUNTY**

Pelwin Oil Co.'s No. 1 Tafepirdy, C NW NE NE Sec. 5-1s-9w .....Location.

**COTTON COUNTY**

Empire O. & R. Co.'s No. 1 Chambers, NW SE Sec. 8-3-9w .....Drlg. 2,987 ft.
T. Medlin's No. 1 Johns, SW SE Sec. 8-2s-9w .....Abandoned 2,526 ft.

**JEFFERSON COUNTY**

Hart's No. 1 Standfield, C W half NE SE Sec. 33-7s-6w..Abandoned 1,179 ft.

**JOHNSTON COUNTY**

N. A. Neff's No. 1 Chapman, C SW NW Sec. 20-4s-5 ....Location.

**LOVE COUNTY**

Gilcrease Oil's No. 1 Burkhart, NE NW Sec. 13-6s-1 ...Rig.

**MARSHALL COUNTY**

Golden Rule Oil Co.'s No. 1 Reeves-Gray, C NW SE NE Sec. 19-6s-6 .....Abandoned 765 ft.

**McCURTAIN COUNTY**

Milton et al's No. 1 Vase, SW NW Sec. 26-6s-21 .....Shut down 2,287 ft.

**STEPHENS COUNTY**

Wirt Franklin Petroleum Corp.'s No. 1 McPhail, NW SE Sec. 1-2s-7w .....Drlg. 3,286 ft.
Smythe et al's No. 1 Johnson, NE cor. Sec. 30-2-8w ....Swabbing 2,476-87 ft.; swab. 25 bbls. oil first day and 15 bbls. water.

**TILLMAN COUNTY**

Bridwell Oil Co.'s No. 1 Rutherford, NE SE Sec. 11-4s-16w .....Drlg. 2,232 ft.
Flake's No. 1 Barba, NE SE NE SE Sec. 19-1s-16w .....Drlg. 960 ft.
Allen Brothers' No. 1 Howell, SW NE Sec. 13-1-17w ...Drlg. 900 ft.
Landfair et al's No. 1 Smith, SE SW SE Sec. 6-2s-16w..Location.
Nance et al's No. 1 Massie, NE NW Sec. 36-1S-6w .....Shut down 2,535 ft.


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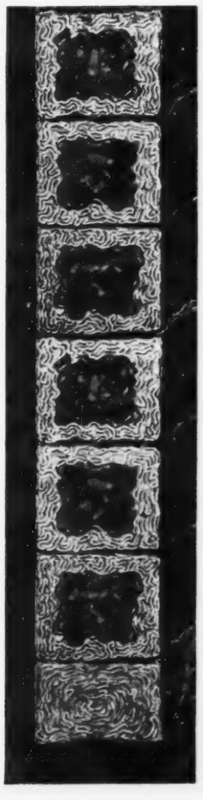

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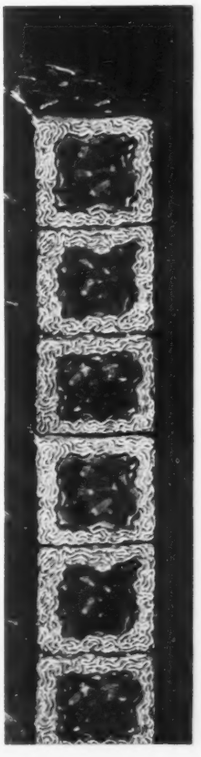

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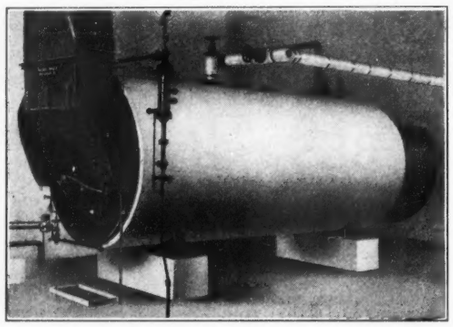

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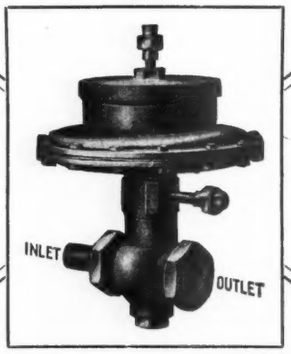


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## FACTORS IN DESIGN OF BUBBLE PLATES

(Continued from Page 54)

atively costly outweigh, in the writer's opinion, the ingenuity of the layout and the impressive intricacy of one of these large plates when assembled for inspection.

**Performance Is Final Test**

The performance of a plate is the final test. The actual measurement of the efficiency of a plate of this type is extremely difficult, if at all possible, but results compared with those obtained with other types are indicative of relative efficiency. During semiplant scale experiments with a six-plate column, 5 feet in diameter, of the type shown in Figure 2, running as nearly as possible in the same manner and fractionating the same kind of vapor as that shown in Figure 1, results were obtained which indicate greater efficiency for the type shown in Figure 2. Both towers were fed at the bottom with vapors of practically the same composition. Both towers were refluxed and controlled

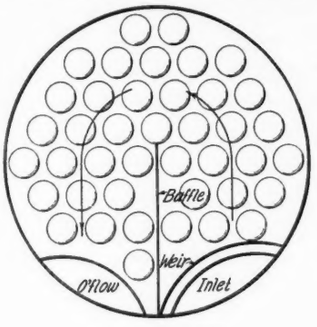


Figure IV.

to give a side stream on the third plate from the bottom of the same yield, viscosity and flash.

The surplus reflux not removed in the side stream was withdrawn from the bottom as a heavy stock. The bottom stock from the experimental tower was of high viscosity and of such boiling range that an initial boiling point below cracking temperature could not be obtained by an analytical vacuum distillation at about 5 millimeters pressure, whereas the bottom stock from the large tower showed a considerably lower viscosity and about 30 per cent could be distilled off at 5 millimeters before cracking temperatures were reached. This is admittedly only a qualitative comparison and there may have been other factors tending to cause this difference but the evidence points to a considerable difference in efficiency for the two types of plate.

The type shown in Figure 2 was developed by the writer a number of years ago for a special purpose and has since been used where conditions permitted. Here the reflux flows in a single stream around the one large bubble cap. The inlet from the plate above and the overflow to the plate below are adjacent but are separated by the baffle shown to prevent the reflux from by-passing directly from one to the other, forcing it to travel entirely around the bubble cap. This plate thus fulfills the requirement of the ideal in regard to flow of reflux. This type is only practicable where a relatively small amount of vapor is handled since it is quite apparent that the total length of cap perimeter, through which vapor bubbles, is small per square foot of plate area. The slots in the cap are made deeper than usual, thus decreasing to some extent the discrepancy in vapor capacity for a given diameter of column. In general, however, this type of plate is only suitable where the column diameter would be very small if calculated as previously outlined and where deeper slots, resulting in higher back pressures, are permissible.

**New Types**

The plate shown in Figure 3[3] is a modification of that shown in Figure 2 and employs the same principle. Here the bubble cap and the vapor chimney in the plate for the passage of vapor are oval so that the bubble caps may easily be taken out through the plates above and the top manhole of the tower and the tower thus cleaned through one opening. This type of plate is in use in a large number of towers on cracking units.

Figure 4 shows an installation designed by the writer utilizing circular bubble caps made by a well-known manufacturer. The principle of lengthening the travel of the reflux is here accomplished by forcing the liquid to travel across the plate and back by means of the baffle as shown.

At about the time this installation was put into service it was learned that one of the oldest builders of fractionating equipment used a plate of quite similar design (Figure 5) with the added refinement of so arranging the overflow pipes that the flow of reflux around each plate is in the same direction, thus causing vapor rising through the reflux on one plate at a given stage of its travel across the plate to contact the reflux on the next plate above at the same stage of its travel, providing the vapor rises vertically to the next plate without turbulence or diffusion. It may easily be shown that this arrangement is the most effective for the progressive contact type of plate. The least effective arrangement is that in which the flow is reversed and the vapor passes from the "oldest" reflux on one plate to the "youngest" on the next plate and vice versa. The performance as outlined in the previous article on bubble plate theory where it was assumed that the vapor, after leaving a plate, was thoroughly mixed and brought to a common average temperature before passing to the next plate lies between the two extremes and probably represents more nearly the actual conditions in any case. Where the diameter of the plate is great with respect to the height between plates the mixing of the vapor would be less and the effect of applying this last refinement of control of flow on one plate with respect to that on adjacent plates should be more pronounced. In any event it may be shown that the ideal performance under any of the three conditions discussed greatly exceeds the performance of the commonly accepted ideal.

In cases of large plates (12 feet in diameter) involving very large amounts of reflux, up to 30,000 gallons per hour, the writer has used bubble plates of a more conventional design as shown in Figure 6. Here the flow is merely straight across the plate and results in more parallel paths than in such designs as Figures 4 and 5 but a great many less than that shown in Figure 1. In this type of design it is very difficult to secure the benefits that may come from the constant directional flow indicated in Figure 5.

**Selection of Type**

The primary consideration in adopting the design shown in Figure 6 rather than that illustrated by Figures 4 or 5 was the fact that the large flow of reflux caused some doubt as to the advisability of increasing the length of travel over that used because of the liquid gradient that might be built up on the plate causing a greater depth of oil on the caps on the inlet side of the plate, resulting in a small flow of vapor through those caps if compensating means were not provided. This raises a somewhat controversial question and the writer's opinion has, during the last few years, undergone a change from one in which the question of liquid gradient on the plate was of great importance to one wherein that factor does not require the attention previously considered necessary.

Observations on full size plates operated under simulated plant conditions using water and air as the operating media indicate that, with a full flow of liquid, gradient has a decided effect when the vapor volume is low with respect to the rated capacity of the plate but that as the vapor volume is increased the effect becomes less apparent and finally, when the liquid is blown off the plate in a dense mass of droplets suspended over the plate, it is negligible. On considera-

[3]Patent applied for by writer, assigned to Standard Oil Co. (Indiana).

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tion it would appear quite evident that the energy involved in keeping a given mass thus suspended should be constant over the plate and that the density of this mass should also be constant regardless of the gradient of the liquid flowing across the plate when no vapor is being forced through it.

**Spacing of Caps**

These considerations bring up the question of design with respect to the location of caps and the space between caps, usually spoken of as the vapor disengaging surface, consideration of which has some bearing also on the proper distance to allow between plates. It is quite probable that as much, or more, of the interchange of heat between vapor and liquid occurs in the zone above the plate where a dense mass of liquid droplets is suspended as in the actual bubbling of the vapor through the liquid. With this thought in mind, it is evident that the disengaging surface and the space between caps should be such that a relatively high vapor velocity obtains at this point. A mass projected upward into free space at a velocity of 5 feet per second will rise about 4½ inches, at 10 feet per second about 18½ inches, and at 15 feet per second about 42 inches.

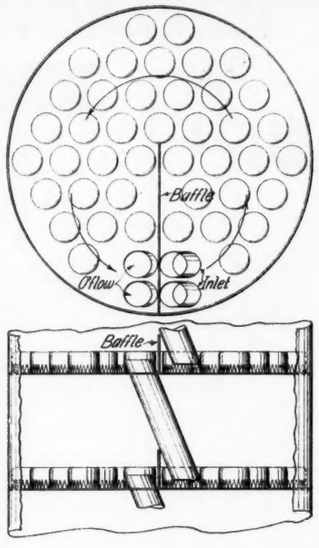


*Figure V*

Admitting that there is a slip between vapor and liquid and that this slip is greater with light vapor than with heavy, it would appear that velocities of between 5 and 10 feet per second, depending on the nature of the vapor, should give good results and it so happens that this range of velocities is found on many designs representing good practice. The jet of vapor at these velocities may extend for some distance above the tops of the caps before being dissipated in the free space of low average velocity. The dense mass of suspended liquid extending from 6 inches to a foot above the caps is sharply defined under these conditions and a lighter spray of drops extending 18 inches to 2 feet is usually observable.

One of the advantages of rectangular caps is that the space between caps is uniform resulting in a uniform velocity tending to suspend the liquid. This is a valid argument, nevertheless circular caps, spaced so that the total disengaging area indicates the same average velocity, show a very satisfactory action. Their greater adaptability to any type of design and their greater utilization of space in a circular tower are the chief advantages of the circular type of cap.

It may be said that the designs illustrated by Figures 2 and 3 entirely disregard the factor of disengaging surface and the suspension of a mass of liquid above the plate. This is a valid criticism but it is felt that the advantage gained by securing a single stream of reflux more than justifies the use of this design in the comparatively few cases where it is practical.

Based on observations covering the height to which entrained droplets may be carried under normal conditions, 18 inches appears to be the minimum distance which should be used between plates. Where individual manholes are used at each plate to provide access for cleaning, the spacing is usually from 2 to 2½ feet. Many early designs called for plates nested as closely as 8 inches apart, employing a large number of plates. It was often noted that, by using a smaller number of plates spaced farther apart with no increase in the total height of the tower, as good or better results were obtained. At least one large refiner uses entrainment arresters consisting of baffles suspended a few inches above the caps and placed so that the rising jets of liquid drops strike them and are broken up. It is probable that the loss of contact by reducing the height of the zone of dense spray is offset by the added turbulence in the space under the baffles. Where entrainment is effectively arrested by some such means, the plates may, of course, be spaced closer together if other conditions permit.

**Other Features**

The design ot the slots in the caps through which the vapor passes and the velocity within the cap itself are largely empirical. It is customary to make the upward velocity in the vapor chimney, the velocity down between the cap and chimney, and the velocity through the slots (based on full slot area) all equal. This velocity should be as high as possible without causing undue back pressure between plates, since it is obvious that the higher the velocity the less space will be taken up by the caps and the number of caps is held down. Practice indicates that velocities ranging from 10 feet per second for heavy vapor to 20 feet per second for light vapor are entirely satisfactory and result in a good balance between the area taken up by the caps and the vapor disengaging surface between caps and the total area of the plate as calculated from the minimum allowable diameter.

On this basis of design it is seen at once that the design of the slots themselves determines the proportions of the caps. It is usually considered that small slots result in smaller bubbles and finer sprays and it appears to be good practice to use slots from 1 to 2 inches high, usually triangular in form, although there are many departures from this size. Thus the slot area per inch of cap perimeter may be fixed and from this, taking into account the thickness of metal in the cap and the chimney, the diameter of circular caps or the width of rectangular caps

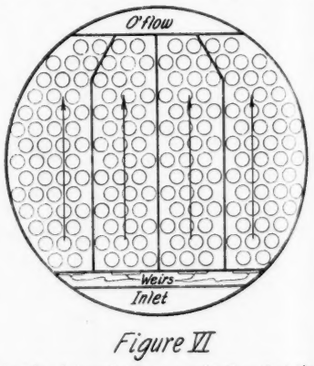


*Figure VI*

may be determined, remembering that the total slot area, chimney area, and the area between chimney and cap are all equal. Actual velocities of the vapor through the slots will invariably be of much higher order than the 10 to 20 feet per second mentioned, resulting in a utilization of only the upper parts of the slots and leaving a reserve of area to provide for sudden overloads. Very often a space is also left between the bottom of the cap and the plate to provide still more area for the escape of vapor in emergencies. Having thus determined the size of caps to be used, the vapor capacity per cap may be found and the total number of caps calculated.

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the plate is of importance in order that as nearly as possible the same amount of reflux may contact a given amount of vapor on all portions of the plate. The designers of the type illustrated in Figure 1 held this factor to be of paramount importance and subordinated all other features of design to this idea. In Figures 2 and 3 distribution is taken care of by having all the liquid successively pass each vapor slot. In Figure 4 the distribution weir shown spreads the reflux out at the start. Both this type and that shown in Figure 5 are subject to the criticism that the travel of part of the reflux is past a considerably smaller number of caps than that of other parts. In Figure 6 the plate is divided into four sections by baffles as shown and the inlet weirs are so proportioned that the length of weir supplying reflux to each section is proportional to the number of caps in that section.

The overflow weir is for the purpose of regulating the level of liquid surrounding the caps. It is usually of such height that the liquid when flowing over it will submerge the tops of the vapor slots about an inch. Greater submergence merely results in greater back-pressure in the tower with no noticeable benefits.

The prime requisite of the overflow pipes, conducting reflux to the plate below, is that they should, to use refinery parlance, "be plenty big." Furthermore, they should be carried to a sufficient depth below the plate before being liquid sealed against an upward flow of vapor that there is an ample head of liquid insuring that the downward flow of reflux will not be stopped by the greater pressure of the vapor below the plate. The writer has seen cases where liquid seals with insufficient head have been installed short distances below the plates and the capacity of the towers greatly limited by plugging and surging due to vapor blowing through the overflow pipe. This may also be caused by spacing the plates too closely together. It is usually simpler, besides being much safer design, to carry the overflow pipes clear down to the plate below and there sealing them in the liquid on that plate. The overflow weirs in Figures 4 and 6 are carried down to the next plate, thus making the entire space between the weir and the tower shell available for overflow. In the other designs the arrangement of the overflows is self-explanatory.

## BAD SMELL TURNED INTO USEFUL THING

(Continued from Page 49)

had the additional advantage of rousing a person who might be asleep and telling him of his danger. Another is reported to have been a laughing gas, upon inhaling which the subject would burst into mirthful haw-haws without any apparent reason for his merriment. One had just the opposite effect, causing the subject to weep briny tears. Among the gases, too, is said to have been one that created stomach-turning nausea, as of a boy who has smoked his first cigar or a man who got hold of the ipecac bottle by mistake. Then there were several that would make an elderly egg seem to have the fragrance of attar of roses.

In this last category falls the odoriferous product selected as best calculated to serve as a warning of impending danger from gas. If the men who concocted it set out to produce something possessing the combined characteristics of Limburger cheese, a garbage wagon and a dead rat under the floor they scored a triumph.

For those who like a touch of scholarliness it might be stated that the mercaptans are in general colorless liquids having a strong repulsive odor and that they are formed by the reaction of alkyl halides with hydrosulphides and in other ways. Ethyl mercaptan is 51.6 sulphur. As an odorizer one pound of it is used for each 1,000,000 feet of natural gas. It is detectable in dilutions as high as one part of ethyl mercaptan to 1,000,000,000 parts of air. Experiments are said to show that it will give warning to conscious persons in concentrations of one part ethyl mercaptan to 15,000,000,000 parts of air or .01 pound to 1,000,000,000 feet of air.

Ethyl mercaptan may be obtained by treating alcohol with phosphorous pentasulphide. It is prepared by distilling a concentrated solution of ethyl potassium sulphate with potassium hydrosulphide or by the interaction of ethyl chloride and potassium hydrosulphide.

### Practical Value Tested

The practical value of ethyl mercaptan as a warning agent has been tried out in the natural gas distribution systems of Franklin and Middletown, Ohio, and a report of the investigators is to be issued soon. The conclusions reached are stated as follows:

1. The odorizing of natural gas with ethyl mercaptan was found to be a practical means for detecting leakage and a much cheaper means than usual inspection methods.
2. Concentrations of 7.7 to 9.3 pounds of ethyl mercaptan per 1,000,000 cubic feet of gas were found very effective in indicating house leaks. It is thought that half that amount or even less would be ample to indicate leaks of significant magnitude.
3. Concentrations of 31 to 46.5 pounds of ethyl mercaptan per 1,000,000 cubic feet of gas were found effective in indicating underground leaks in mains and service lines.
4. The use of ethyl mercaptan caused no complaints from customers unless leaks were present.

In summarizing the experiments and the results achieved the report says:

"Leakage surveys of natural gas in which ethyl mercaptan was used to odorize the gas were made at Franklin, Ohio, a city having a population of 4,000, a natural gas property of 1,050-1,100 meters, and a daily gas send-out at the time of the survey of 100,000 cubic feet; and at Middletown, Ohio, a city having a population of 30,000, a natural gas property of 7,500 meters and a daily gas send-out of 890,000 cubic feet. In the survey at each city the entire gas send-out to the distributing system was odorized for several days with comparatively low concentrations at the start, 7.7 to 9.3 pounds of ethyl mercaptan per 1,000,000 cubic feet of gas, for indicating house leaks, and then later increased to high concentrations, 31 to 46.5 pounds per 1,000,000 cubic feet of gas for several days to indicate underground leaks.

### Customers Complain

"The house leaks were detected through complaints of customers, and the underground leaks by making a survey of the distributing system for odor in the air, at curb boxes, sewer manholes, catch basins and probe holes. The underground leakage survey was also supplemented by complaints of street odors.

"At Franklin, where it was thought that few leaks existed due to a survey by ordinary inspection methods having been made a short time previously, 23 main and service line leaks and 189 leaks in customers' homes were found in the survey with ethyl mercaptan. At Middletown 102 main and service line leaks and 1,047 leaks in customers' homes were found. Most of the leaks in homes were not significant from the viewpoint of explosion hazard, though a number were thought to be important. Many of the underground leaks constituted important loss of gas and explosion hazard.

"In these leak surveys the use of ethyl mercaptan was entirely successful. It appeared to be far more efficient and entailed only a fraction of the cost of ordinary inspection methods. A discussion is given of the chemical and physiological properties of ethyl mercaptan, the procedure for conducting ethyl mercaptan surveys, the importance of favorable season and weather conditions and the concentration found to be effective."

In the Franklin survey, where as stated in the report, it was supposed the gas-distributing system was virtually free from leaks, 15 were found in curb boxes, 5 in service lines and 3 in mains. In both Franklin and Middletown E. A. Munyan, manager of the gas department of the Union Gas & Electric Co., co-

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operated with the Bureau of Mines in making the surveys. In those cases where the odor of the ethyl mercaptan was detected in residences the occupant of the property was advised to call a plumber and have the defect repaired.

**Pipe Line Patrolled**

After using the low concentrations for house leakages for a few days the concentration was increased to disclose underground leaks and the pipe line was patrolled, with the result that unsuspected leakages were detected through offensive odors at curb boxes, catch basins, sewer manholes and other places. It required only two days in Franklin and five days in Middletown to complete the survey of the underground lines.

When the survey was begun in Franklin the gas consumers were not told of the plan. The result was that when a strange and overpowering odor pervaded various homes it was believed in some cases that a rat or other animal had died about the premises and men went to much trouble and expense in tearing up flooring and walls in the search for the source of the smell.

In Middletown a different course was adopted. The people were advised of the survey so that when their olfactory organs were assailed by this prince of bad smells they knew what to do. There was unanimity in describing the odor as "something awful."

One Franklin man wanted to know what his butcher meant by delivering meat that nobody could stay in the house with. In another case the odor seemed to come from a closet and an irate woman dragged from it old shoes belonging to her husband and threw them out. One woman, mortified by the smell that filled her home and failing in every effort to run it down, burned disinfectant in the rooms for several days. The odor from one main line leak chanced to be strong in the neighborhood of a bridge crossing a stream in Franklin. Persons using this bridge said uncomplimentary things about those folk living farther up who supposedly were running sewage into the stream.

**Sneeze and Snicker Discarded**

In connection with the experiments conducted to find a satisfactory warning agent both sneezing gas and laughing gas are said to have been discarded definitely as unfeasible. In the case of the former it is pointed out that it could not be mixed properly with natural gas. There is said to have been entire agreement in the opinion that an offensive odor offered the best method of detecting gas leaks. There is said to be a possibility that a viler smelling creation than ethyl mercaptan may be utilized. Those who have had a sniff of the ethyl mercaptan say it can't be done.

While Bureau of Mines experts have been experimenting with processes for odorizing natural gas, the Railroad Commission of that State and chemists of the Standard Oil Co. of California have conducted investigations along similar lines. Concerning the results of the work there Claude C. Brown, State gas administrator, says:

"In line with the efforts of the railroad commission to protect the consumer of natural gas from danger of accidental asphyxiation, due to undetected leakage of the odorless natural gas, notable success has been achieved in the odorization of that gas in California.

"The immediate result of the odorization of the natural gas has been a marked increase in the complaints as to gas leakage, and an almost complete cessation of loss of life due to accidental asphyxiation.

"For a number of years the necessity of putting some kind of distinctive and lasting odor into the odorless natural gas has been recognized by the commission and the gas utilities. Under stimulus of the commission a great deal of experimentation has been carried on by different investigators to find a substance that would adequately meet the requirements.

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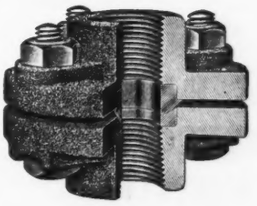

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"Investigation into the subject has resulted in the production by Standard Oil Co. of California, of a substance known as Cal-Odorant Oil No. 3. The injection of this substance into the natural gas at the rate of 2½ gallons per 1,000,000 feet of gas is sufficient to make the odor distinctly noticeable.

"Automatic odorizing stations have been established for the introduction of this product into the natural gas, and at the present time odorized gas is being distributed in the cities of Monrovia, Pasadena, Alhambra, Beverly Hills, Hollywood, Santa Monica, Culver City, Venice and Santa Barbara, and in all communities being served with natural gas by Pacific Gas & Electric Co.

**Complaints Increase**

"The effect of odorization in the communities where it has been instituted is very marked. In the Pasadena-Alhambra district the gas-leak complaints had been averaging about 50 complaints per week. Immediately after odorization began this figure jumped 400 per week.

"Likewise, in Beverly Hills and Culver City the leakage complaints jumped from 10 per day to 160. The peak day for leak complaints generally occurs about the third day after odorization, the peak being about 10 times the average and the number of complaints gradually declining to a constant level of about 5 times the average for unodorized gas.

"The natural gas for consumption in southern California comes from 17 different fields and it is estimated that it will be necessary to install about 40 odorizing stations to handle this gas. In northern and central California, where the sources of supply are fewer, a smaller number of stations will be necessary."

The experiments with ethyl mercaptan conducted by the Bureau of Mines experts were not the first made with this chemical in an effort to find an efficacious gas-leak detector, but they appear to be the first attaining so high a degree of success. In the Proceedings of the Natural Gas Association of America for 1926 W. F. Wright describes a trial of ethyl mercaptan as a stench gas over a period of 45 days. He says: "From the standpoint of locating unaccounted-for gas the results were not considered as very satisfactory. However, we did succeed in eliminating possibly the most of the leakage in the customers' house piping and appliances."

## GERMANS MAKE PLEA FOR LOWER GASOLINE PRICES

(Continued from Page 180)

its manufacture, has now for the most part disappeared.

Along with this contention over the price of gasoline has come a demand from users of motor fuel for standardization of gasoline and gasoline mixtures. They are demanding uniform standards for all brands of gasoline and mixtures as well as for lubricants to enable them more easily to compare the several brands. So it will be seen there is some doubt in the minds of these consumers of motor fuel in respect to the quality of the several brands, including synthetic gasoline offered to them.

When the World Power Conference meets in Germany next year, an important section will be devoted to international standardization of motor fuel and to the standardization of analyses. The German Bureau of Standards has appointed a special committee to investigate these questions.

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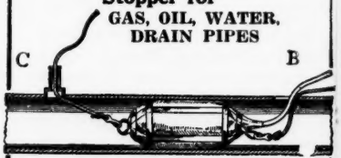


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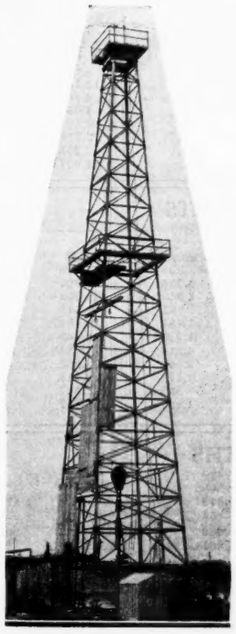

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